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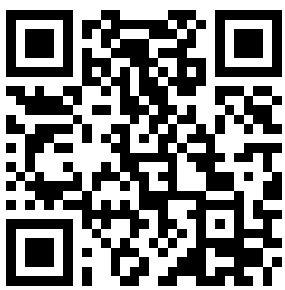

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THE

EDUCATIONAL TIMES,

AND

Journal of the College of Preceptors.

Vol. LVII.] New Series, No. 513. JANUARY 1, 1904. {*Published Monthly, price, to Non-Members, 6d.; by Post, 7d.* *Annual Subscription, 7s.*

COLLEGE OF PRECEPTORS.—The Half-Yearly General Meeting of the Members of the Corporation will be held at the College, Bloomsbury Square, W.C., on Saturday, the 23rd of January, 1904, at 3 p.m.

C. R. HODGSON, B.A., *Secretary.*

COLLEGE OF PRECEPTORS.—EXAMINATIONS, 1904.

1. DIPLOMAS.—The next Examination of Teachers for the Diplomas of the College will commence on the **30th of August.**

2. PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.—In 1904 the Practical Examinations will be held in **February, May, and October.**

3. CERTIFICATE EXAMINATIONS.—The Midsummer Examination for Certificates will commence on the 28th of June.

4. LOWER FORMS EXAMINATIONS.—The Midsummer Examination will commence on the 28th of June.

5. PROFESSIONAL PRELIMINARY EXAMINATIONS.—These Examinations are held in March and September. The Spring Examination in 1904 will commence on the 1st of March.

6. INSPECTION AND EXAMINATION OF SCHOOLS.—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

PRIZES.

Diploma Examination.—The following Prizes will be offered for competition:—Theory and Practice of Education, £10; Classics (Greek and Latin), £5; Mathematics, £5; Natural Science, £5. The Doreck Scholarship of £20 will be awarded on the results of the Christmas Examination.

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C. R. HODGSON, B.A., *Secretary.*

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NOTICE.—"THE EDUCATIONAL TIMES" for **February** will contain the CLASS LISTS of CANDIDATES who have passed at the recent CHRISTMAS EXAMINATIONS of the College of Preceptors.

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The Educational Times.

Rhetoric and Reason.

In the sphere of educational conflict the recurrence of the gracious season of peace and good will has been most opportune, and one would fain hope that its "sweet influences" may be pervasive and permanent. The "baleful controversy" over the Education Acts, sharpened by the approach of the London County Council election and by vague anticipations of a General Parliamentary Election, seemed to be losing sight of the prime object of "considering the children," and to be passing into a heated struggle for ballot-box superiority. If political force is to be the determining factor, the struggle may be prolonged through generations, each party alternately on top. Has party feeling risen so high as to preclude the hope that the leading combatants may even now proceed to disentangle the essentials from the accidents, to set calmly and clearly before them the true educational objective, and to devise practical means for its peaceful attainment? Neither passion nor force can be a remedy. And elsewhere in English-speaking countries there are examples of smooth-working arrangements in abundance.

The impetuous onslaughts of educationists, as well as of Churchmen and politicians, may well make us tender critics of attempts to observe the golden mean in other departments of human activity. Here is Prof. Perry again: he has been lecturing a public meeting at Oxford, under the auspices of two learned societies, on "Oxford and Science" (December 4). We hope we do no violence to the flowers of expression that we separate from their context. Thus: "The absence of scientific method is evident everywhere." The successful men—in the Church, in the Civil Service, in journalism, at the Bar, in boys' schools—"have no power to think for themselves in any subjects outside their narrow professional grooves." "It is very noticeable that the Oxford man has retreated from the Renaissance position, and has gone back to the Mediæval." "Why is there so little research of any kind in any subject going on in Oxford?" "There is too much of the draper's assistant style of work about your Boards and Committees." We are not surprised that the *Oxford Times* (from whose report we have quoted) tells Prof. Perry that "he clearly knows very little about Oxford," and counters point by point "the somewhat arrogant and sweeping indictment" of his "headlong" oratory. Since the event was to be, one may sympathize with Prof. Odling's wish "that the address had been given to Convocation." But perhaps it comes to much the same thing.

The other side, however, can play the same game—if, indeed, it has not bettered the instruction it has received. Prof. Ramsay, of Glasgow, a distinguished son of Oxford, is reported to have told the Classical Association of Scotland (December 5) that he "understood geometry was now to be studied on the easy and shoddy system, with the intellectual elements left out," and to have spoken of "youths who were being hurried on to raise a structure of shoddy science on a basis of shoddy mathematics." This deliverance, we are inclined to think, beats Prof. Perry's very farthest throw. Of course, Prof. Perry will point to Prof. Ramsay as a most shining proof of his thesis; but what we are immediately concerned about is the form and manner of disputation. Prof. Ramsay cannot be taken to be so appallingly ignorant as to make such statements in a literal sense: he is rather to be convicted of grievous indiscretion of forcible speech. The *Scotsman*, which is not always so conciliatory, remarks (December 15):

> What is urgently needed at the present day is a satisfactory course of education for those boys whose education stops short at the primary, or even the secondary, school stage, and to the solution of this problem the worst guides are those whose faith in classical training blinds them to the educational value of other subjects. . . . If Prof. Ramsay and those who think with him would recognize that in these days a classical education should be regarded as something of the nature of a luxury, and would rest content with specialization in this direction at a later age than has been the rule hitherto, the whole business of education would be more smoothly and profitably managed. As it is, the classical tradition is apt to be the curse of secondary education, and stands in the way of real progress in education.

But you cannot manage much less delicate and complicated matters either smoothly or profitably in the midst of a tempest of violent talk based on one-sided intelligence and narrow sympathy. How much more practical is the attitude displayed by Principal Sir Arthur Rücker in his recent address to the Modern Language Association!

If we pass to the sister island, we find Archbishop Walsh demanding "justice," and reiterating that "justice means equality." Meantime Prof. Tyrrell publishes an ill-timed

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sonnet, acrid in tone and lop-sided in argument, and the Bishop of Limerick, whose "whole life has been spent amidst the inner workings of the Catholic Church amongst our people," declares as to one of the Professor's representations "that a more outrageously untrue or unfounded statement was never made"—that "it is an utter falsehood." Even in Wales the Bishop of St. Asaph has been impelled by the utterances of another bishop to "venture to put in a plea that, instead of being, so to speak, up in arms against those who differed from them, they would be at once wise and just in trying to probe to the very bottom any substantial and real grievance their friends might have, and in meeting their grievances as broad-minded Christians." Surely this is the better—the only helpful—counsel.

University College, London.

THE munificent and opportune gift of £50,000 to University College, London, is a most welcome sign of discerning and generous interest in the higher education of the Metropolis and in the advancement of English learning. The sum, it was announced, was "to be used by the Council of the College for the promotion of higher scientific education and research in that institution." Now we have too much confidence in the business capacity of the Council to raise any question as to their allocation of the money; but the question has been raised, apparently, within the gates of the College itself, and has challenged public comment in public prints. But first let us ask: What is "scientific education and research"? One would hope that the term "scientific" is not to be taken in the narrow and exclusive sense of natural and physical science; for, though these branches would no doubt readily absorb the money and cry for more, there is at least equal need for it in other branches of education and research that are no less "scientific." Let us recall the discriminating remark of the late Prof. W. Kingdon Clifford, one of the most distinguished of University College professors in the past generation:—

> Scientific thought does not mean thought about scientific subjects with long names: there are no scientific subjects. The subject of science is the human universe; that is to say, everything that is or has been or may be related to man.

The generous donor, as reported, says nothing about "scientific subjects"; he says, "scientific education and research." The habit of associating the term "scientific" with natural and physical subjects is naturally misleading. The final determination, however, will no doubt lie with the donor.

The really disquieting elements, however, appear in the report of an interview with Prof. Starling, through whom the gift was made (*Daily News*, December 5). Prof. Starling is said to have stated that the money "will in all probability be used towards bringing about the incorporation of University College with the University of London." Now what has this to do with "the promotion of higher scientific education and research"? The College has been promoting scientific education and research in all its departments during three-quarters of a century—with distinguished success too—without any assistance from the University of London, and (not to put too fine a point upon it) "only" as Mr. Bailey Saunders has properly pointed out (*Times*, December 2) "by the self-sacrificing efforts of the Professors and Lecturers"; and, though incorporation is expedient now, there is nothing on the surface to show that the work of the College will not proceed with its splendid efficiency even if incorporation do not take place, or, indeed, that its efficiency will be markedly advanced even if incorporation do take place. It is with the University, not with the College, that the gain will chiefly lie. However, Prof. Starling is reported to have said: "Until these two bodies, and others, join forces, instead of pulling in different directions, there will be little real advance in higher education in London." The forecast, we cannot but think, is extravagant, except, indeed, in respect of one of the College departments, where it is painfully true; but that department, strangely enough, is never thought of as engaged in "scientific education and research." The money, then, seems to be destined "to promote scientific education and research" by clearing away difficulties to incorporation, which does not clearly promise the College anything in particular, except possible indirect advantages of co-ordination and the University's presumably stronger influence to conciliate public support, once people see that it is in very fact a "teaching" University. The individual outlets for the money appear to have been particularized by Prof. Starling: he is made to say that the incorporation involves the removal of the Medical School and the formation of a clinical school at the Hospital, and the transference of the boys' day School to some new site in the North-Western district, and that "these two operations will absorb about £130,000 between them." We are not competent to divide the six figures between the two operations, but we have heard about one-half of the sum estimated as the cost of the latter. How the Hospital alterations could possibly involve £65,000 we entirely fail to conceive. As to the School, does it pay, whether in solid cash or by operation as a feeder of the College? If not, why not simply drop it, and save £65,000 at least? It does not seem to be any part of the duty of the College either to maintain the School at all or to provide secondary education for Hampstead, except there is profit in the undertaking. The whole question—unless Prof. Starling has been completely misrepresented—is of distinct public importance, and of very special importance to the College and to the University. We trust, however, that reassuring explanations will be made, and that Prof. Starling will soon be able to announce that he has received that other sum of £50,000 which is already in tolerably confident expectation.

NOTES.

Is there any conceivable end to the troubles of teachers? Probably not; for, when a member of an Education Committee objects to a candidate for a head mastership "because he possesses a University degree," one cannot but feel that the possibilities of disqualification are tolerably wide. It is Hornsey that is credited with the benefit of this singular objector's educational advice. Meantime, so far as yet appears, there may be comfort in reflecting that there is a world elsewhere for candidates with degrees. "Any consideration of the teachers of the London Board schools," says the *Morning Advertiser* (December 14), "compels respect for their

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academic attainments." Our industrious contemporary produces the following statistics:—B.A., 123; B.Sc., 23; B.A. and B.Sc., 9; M.A., 23; M.A. and B.Sc., 1; D.Sc., 1; LL.B., 1; Mus.Bac., 3; L.L.A., 64; a Classical Tripos man; and 58 that have surmounted the London Matriculation. "Doubtless most of these men and women have worked hard after their day's work to obtain their degrees. Many of them have risen from homes of working men." Yes, and all the more credit to them for their aspirations and perseverance. In the three counties of Scotland where the best elementary education in the three kingdoms is given there is not, we believe, a single head master without his M.A.; nor need a candidate without a degree—and a good degree too—waste his time in applying. Evidently our educational museums are not yet complete.

A GOOD education and a strenuous and useful life—such are the foundations of success. So Lord Strathcona declared to the students of the City of London College, when he distributed the annual prizes (December 7); and Lord Strathcona, the Chancellor of two Universities and the architect of his own fortune, may well be believed. The intimate connexion between educational efficiency and commercial and industrial prosperity, and the special importance of such institutions as the City of London College for boys that leave school early for business, were most appropriate subjects of comment by the speaker—well worn subjects, no doubt, but ever needing fresh enforcement, particularly by an eminently successful captain of industry that has proved their value. We trust that Sir Edward Clarke will presently obtain the completing fraction of the £10,000 he wants in order to entitle the College to the grant of £15,000 from the Mitchell Trustees, and to enable the Governing Body (of which he is Chairman) to extend the work of the College. There ought to be virtue in Lord Strathcona's hint that the amount would soon be obtained "if only City men could be made to realize the good and useful work carried on at the College." It must seem very strange to Lord Strathcona that City men should be so slow to realize their duty in the matter.

IN discussing practical arrangements for the training of teachers in the ordinary secondary schools (in our September number) we wrote (page 376):

> Our own view is that in any case a fee should be paid, and that, when the student is attached to a particular master . . . the fee should be paid to that master."

This view has recommended itself elsewhere. The Professor of Education in Edinburgh University has proposed, and the Governors of George Heriot's Trust have agreed, that "an arrangement should be made whereby students for the secondary-school master's diploma should be permitted to receive a practical training in the teaching of mathematics and science in George Heriot's School for a term of ten weeks, eight hours per week." On the suggestion of the Head Master, the principal mathematical master has been appointed master of method. The Head Master will fix the days and hours of the students' attendance; and "the entire control of the students in the school" will, of course, be in the hands of the Head Master and the principal mathematical master. If Prof. Darroch choose to look in, no doubt he will be perfectly welcome—as a visitor. The whole of the remuneration goes to the principal mathematical master: £10 a year from the University, and a fee of £1 from each of the students.

ELSEWHERE we intimate a fresh step taken by the Assistant Masters' Association for the fuller discussion of educational questions of immediate importance, and we publish a letter on the subject from Mr. T. E. Page, their Chairman. There are special advantages in the informal treatment of such matters by way of preliminary test, and we cordially wish the best success to the new and enterprising attempt. Good advice, even when "wise, weighty, and well considered," and tendered by "those who have special experience or knowledge of the subject," is not always eagerly embraced and put into practice; but it is well that teachers should frankly express their views and leave the responsibility of acceptance or rejection with the administrative Authorities. At the same time we cannot doubt that the Authorities will gratefully welcome all suggestions based on knowledge and experience.

THE Technical Education Board will no doubt deal sympathetically with the elaborate results of the investigation into the requirements and facilities for the technical training of women in London conducted since last April by a special sub-Committee of the London County Council. The initial difficulties, which are fully recognized in the Committee's Report, are obviously—perhaps naturally—very serious; especially the difficulty of getting girls to give their minds to training of any kind. The influences of the elementary school ought to be continuously contributory to a more sober outlook on the future; and in the meantime the Committee do well to signalize the eminently liberal and helpful action of large and long-sighted employers, which, it is to be hoped, will be widely imitated. Not a few of the expedients suggested in the specific proposals of the Committee have already attracted the active interest of particular associations, whose experiences cannot but be useful in a large concerted scheme. A modest expectation of immediate results will be prudent; but the movement must eventually produce far-reaching effects on the social welfare.

THE suggestions of the Committee of Investigation into the Education and Training of Pupil-Teachers, appointed by the Board of Education in March last, have already been largely incorporated in the new regulations on the subject issued by the Board; but there is still "within the limits of those Regulations much room for variety of organization and for experiments by Local Education Authorities and others in the direction of establishing a new and improved pupil-teacher system." Accordingly the Board have issued a Circular with "Hints on the Organization of the Instruction of Pupil-Teachers," under ten heads, "mainly based upon the information gathered by the Committee," in the hope that they will be of service to the Authorities and others concerned. The question is both complicated and urgent, and the fullest and most accurate information is needed for a wise solution.

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M. Charles Martin, Professeur de l'Université de France, writing from the French Department of the University of Glasgow, invites applications for assistant teacherships of English in certain French national secondary schools (*lycées*). The duties are "to give for two hours a day English *conversation* lessons to small groups of pupils"; and the equivalent offered is free board and lodging (separate room), with free attendance at any of the *lycée* classes. Candidates must have a good English pronunciation, of course, "but it is not necessary for them to be able to speak French." "They must be graduates of some British University, or possess some other academic recognition of their previous studies." We have already noted a similar interchange of teachers between American and French schools. It is obviously "an excellent opportunity offered to students and teachers to acquire a thorough knowledge of the French language, and to observe the methods in teaching the various subjects of the curriculum in France."

The rustication of three cadets at the Royal Military College, Sandhurst, for "cribbing" in examinations has led an inquiring interviewer to extract from "a well known Army coach" this information (*Daily News*, December 21):

At a "pass" examination "cribbing"—or the use of work which is not the candidate's own—has been a recognized thing among the men examined, and connived at by those above them. But a competitive examination is conducted on the strictest lines, and to use any aids would be held to be the act of a cad. Any candidate detected in "cribbing" in such an examination would be ruled out of the service. Thus, a candidate would obtain a lieutenant's commission after having honestly passed an examination, but in the examination for promotion to a captaincy he might "crib" without damage to his personal honour, the point being that a man must not use any advantage whereby another candidate would be injured.

The coach is reported to have added that "the manner in which candidates have been given to understand that some examinations were a mere farce is amusing—apart, of course, from the question of efficiency and national safety." The examples given are sufficiently disgusting. The cribbers are grievously to blame, no doubt; but surely the teachers, examiners, and other superior officers cognizant of such practices ought to have been rusticated first. But "even now," says another informant, "well acquainted with military examinations and the general accomplishments of candidates for the Army"—"even now, in spite of the admirable efforts of the present military staff, the educational and training parts of the Army have been disgracefully starved, and knowledge depreciated, by the Civil side." That is to say, the national resources, the national honour, and the lives of our soldiers are but playthings in the hands of some brainless officials. No doubt all this will be denied; but, if there be any truth in it, there must be a prompt ending to such intolerable proceedings.

SUMMARY OF THE MONTH.

At the meeting of the Standing Committee of the National Society (December 9) the following resolutions were adopted:—

1. The National Society, being firmly convinced that in the present condition of the education question the defence of Church schools is the paramount duty of those interested in religious education, and that the most serious present danger is isolated action on the part of single schools or localities, calls upon Churchmen to rally to the support of the Society; and, taking its stand upon the fair working of the Act of 1902, it further calls upon the managers of all Church schools to insist upon their rights under the law of the land and to turn a deaf ear to all proposals for compromise outside the law.

2. That the Secretary be instructed to make through the columns of the Press, and otherwise, an urgent and immediate appeal for a special fund to enable the Society to assist Church schools in the Principality of Wales in their present difficulties; and that the Finance Committee be authorized to act in co-operation with the Diocesan Associations in the temporary assistance of the managers of individual schools, and to make immediate advances of money if necessary to meet pressing needs, until the law can be enforced.

A conference was held (December 6) at the Westminster Palace Hotel between the Consultative Committee of the Board of Education and representatives of the following professional bodies:—General Council of Medical Education and Registration, Institute of Actuaries, Institute of Bankers, Institute of Chemistry, Institute of Civil Engineers, Institution of Electrical Engineers, Institution of Mechanical Engineers, Pharmaceutical Society, Royal Institute of British Architects, Society of Accountants and Auditors. A representative of the War Office and of the Civil Service Commission were also present. The subject of discussion was the desirability and feasibility of the introduction of a system of school-leaving certificates for England. Lord Londonderry attended for a few minutes, and Sir W. Hart Dyke subsequently took the chair.

The Board of Education has issued a circular to training colleges explaining the regulations to be applied to specially recommended students that intend to study for a third year in France or Germany. It is laid down that, as a rule, only one student be sent to the same place—a provision that tends to throw the student on his own linguistic resources. Paris and Jena are mentioned as examples of cases where the rule might be relaxed.

The twelfth annual general meeting of the Association of Principals and Lecturers in Training Colleges under Government Inspection was held in the Caxton Hall, Westminster, on December 18–19. The Rev. G. W. Garrod, Training College, Ripon, delivered an outspoken and practical presidential address. He declared that never in his experience had there been so critical a moment as the present, and that he believed "the history of training colleges for the next twenty years will be determined by what takes place during the next six months." He made five suggestions: (1) that the character and value of the work will be seriously imperilled if the colleges cease to be in direct contact with the Board of Education; (2) that generous financial treatment is necessary; (3) that a reasonable continuity of curriculum is indispensable; (4) that a special inspectorate should be re-established; and (5) that the Board of Education should take the colleges into their confidence and invite their co-operation.

The centenary of Herder was celebrated at Newnham College on December 9—in anticipation, for term ended on the 12th, and Johann Gottfried Herder died at Weimar on the 18th. Dr. Breul addressed an audience of some three hundred for a round hour on Herder, with special reference to his relation to England; and Newnham and Girton ladies recited and sang folk-songs of Herder's. There was also an exhibition of Herder portraits. The celebration was repeated in London on December 22, when Dr. Breul offered to the Modern Language Association suggestions for the expression of a practical interest in Herder, with a view to firing enthusiasm for the study of Herder's works and of German and comparative literature.

The Modern Language Association held its annual general meeting December 22–23, Principal Sir Arthur Rücker, President, in the chair. On the first day, after Dr. Breul's eloquent commemorative address on "Herder and England," M. Minssen, M.-ès-L., offered a "Causerie sur les Auxiliaires de la Conversation en Classe"; and Mr. G. G. Coulton, M.A., raised discussion on "Modern Languages and Modern Thought" and Mr. W. Mansfield Poole, M.A., on "French Grammar." On the second day Mr. Cloudesley S. H. Brereton, M.A., L.-ès-L., discussed "Some Difficulties in the Direct Method"; Miss Williams, President of the Guilde Internationale, presented an invitation to hold an Easter meeting in Paris, which was accepted by acclamation; and Prof. Sadler, who is President designate for 1904, delivered an able and interesting address on Herbert Spencer's educational ideas.

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A NEW Classical Association for England and Wales was inaugurated at a meeting at University College, London (December 19). Sir Richard Henn Collins, Master of the Rolls, presided, and among the speakers to the resolutions proposed were the Vice-Chancellors of the Universities of Oxford and Cambridge, Sir Frederick Pollock, Prof. Postgate, Prof. Butcher, Prof. Sandys, Dr. Gow, Miss Penrose, Mrs. Strong, and other educationists. The objects are stated to be: to promote, develop, and maintain the study of the classics; to improve the methods of classical study; to encourage original investigation; to call attention to new discoveries bearing upon classical studies; and to promote intercourse between all lovers of classical learning. The Master of the Rolls is first President; Dr. Walter Leaf, Treasurer; Prof. Sonnenschein, Birmingham University, Secretary. 450 members have been enrolled.

MR. JOHN DILLON, M.P., speaking at the University Medical School annual dinner in Dublin (December 12), referred to a statement in a *Times* leader (December 9) that "there is no reason to apprehend that the difficulties of the Session will be increased by any meddling with Irish University education." "Well," he remarked, "if the Government imagine they can so easily throw aside this great question, I beg to say they will have a rude awakening." His own view he expressed thus:

I regard this University question as a question of the most vital interest to the people of Ireland, though I would not care for a University of Ireland much if it was not a University which threw its doors wide open by a system of correlated education to the children of the poorest on equal terms with the children of the rich. What we want in Ireland is, in the broadest sense, a democratic institution which will tap what I believe to be the richest mine that now exists in Ireland—namely, the brains of the people of Ireland—which will throw open wide to all our people the gates of knowledge, which will rear in this capital an institution really national; and I prefer that name to a Catholic institution. Let it be a national free University, and so long as Ireland is Catholic it will be Catholic by its nature, but let it be a national University above all. And what I look forward to in that institution is a University which will be characteristic of Ireland in its democracy, in its freedom to all the people, and its devotion to science, for which the Irish people have always been celebrated, and in these particular principles, peculiar in the world, that it will be a great scientific institution, and, at the same time, will be characteristic of Ireland in the record of uniting within its walls devotion to science in the broad and most unfettered freedom, combined with that devotion to the spiritual life which has been equally characteristic of Ireland. I trust that it will also be a great Celtic University, the centre of Celtic study throughout the world, a University to which foreign students will resort in order to learn the language, literature, and traditions of the greatest of the Celtic races.

PROF. G. G. RAMSAY (Glasgow), in his Presidential Address to the Annual General Meeting of the Classical Association of Scotland (December 5), in Glasgow University Buildings, said that classical men knew by experience what a splendid instrument for opening, expanding, stimulating, and furnishing the young mind could be forged out of wisely conducted classical study. Classical studies were eminently intellectual in themselves because they called into play from the very first those mental processes by which habits of observation, thought, and reasoning could gradually be formed, and because they introduced the young mind by methods suitable for youth to those large and simple conceptions upon which the whole fabric of human civilization rested. But, if the classics were to be used for purposes of education, to leave out the healthy wrestling with grammar and with dictionary was indeed to play "Hamlet" without the Prince of Denmark. Prof. Ramsay then passed on to consider the false notions (as he held them to be) gaining currency as to the great disciplinary study of mathematics. He was no mathematician himself, but he had never understood or used argument in his life without becoming conscious that the mental processes required to grasp the reasoning of Euclid's propositions supplied a standard of judgment applicable to every human circumstance. But now, he understood, geometry was to be studied on the easy and shoddy system, with the intellectual element left out. Euclid was too hard, his processes were too intellectual, for the youths who were being hurried on to raise a structure of shoddy science on a basis of shoddy mathematics. Why had the Germans cultivated science and technical education so successfully? There were three main reasons. The first was because they laid down as the foundation a basis of thoroughly sound general education; the second was because they had a few thoroughly equipped institutions in which science was taught as science in its highest developments; and the third reason, above all, was because their master-manufacturers were alive to the value of scientific guidance and advice for the conduct of their own business. If we were ever to have high-class technical education, it was the masters and manufacturers who needed to be educated into seeing the necessity for it, instead of calling out for protective tariffs to enable them to go on in their old rule-of-thumb ways and so be saved from the competition of their more expert rivals. Papers were afterwards read by Prof. Phillimore and Dr. J. G. Kerr.

AT the annual dinner of the Edinburgh Merchant Company (December 4) Principal Sir William Turner, in proposing the toast of "The Stock of Broom" (the emblem of the Company), suggested an arrangement for practical training of teachers by the University Professor of Education in the Company's schools. In reply, Mr. John Harrison, the Master, said:

With regard to Sir William Turner's suggestion that facilities should be given in the Company's schools for the training of teachers, the Company would be largely guided, as it ought to be, by the advice of its head masters. Sir William would perfectly understand that the Company meant to train up teachers in their different schools, but that they could not allow the teaching of teachers to interfere with the teaching of children who paid a fee for being taught. Sir William Turner's request would have the sympathetic attention of the Board. The Company was altogether at one with what had been said regarding the teaching of modern languages. But they wanted the Universities of Scotland to remember what ought to be the position of modern languages in their curriculum. The Universities did, to a certain extent, bar the modern languages from their proper position through the position assigned to them in the entrance examinations. He knew that he had the hearty sympathy of Sir William Turner and of the Senatus of the University of Edinburgh when he said that, if modern languages were to be taught as they ought to be taught in the secondary schools, they must have the assistance and the co-operation of the Universities of Scotland as a whole. The Merchant Company had for years been taking what they considered the proper steps for teaching modern languages, and they wanted the Universities to co-operate in that work, which was necessary and proper for the good of the United Kingdom and for the better education of its youth.

A similar arrangement for training University students in mathematics and science in George Heriot's School has been satisfactorily completed (December 14).

AT Mill Hill School (December 18) an excellent portrait of Dr. J. A. H. Murray, by Mr. F. S. Ogilvie, one of his "old boys," was unveiled by Mr. Bryce, M.P. "If Dr. Johnson knew that the great dictionary of our day was being conducted by a Scotsman and a Nonconformist, and that it was being brought out and published at the cost of the High Church University of Oxford," said Mr. Bryce, "he would think that times had changed indeed." Dr. McGrath, Provost of Queen's College, Oxford, attended on behalf of the Clarendon Press. The portrait represents Dr. Murray at work on the Dictionary. The new Scriptorium was also opened by Mr. Bryce. The old one, in which Dr. Murray first laboured on the Dictionary (after Mrs. Murray had very properly expelled it from the house)—an iron erection with a wooden interior—was left by Dr. Murray as a reading-room when he removed to Oxford, but was burnt down some time ago. The new building keeps the old name, and an inscription over the fireplace sets forth that it preserves the memory of the work done on that spot by Dr. Murray, whose name it bears. Dr. R. Garnett and the Rev. R. Harley also spoke. Dr. McClure presided on both occasions.

THE Westminster Play this year (December 11) was the "Trinummus" of Plautus. The performance was spirited throughout. The Westminster pronunciation of Latin was adopted "as being [according to the prologue] of ancient use in the school and habitual with many famous poets and scholars, whose ghosts annually revisit the Play." Turning to the events of the past year, the prologue also lamented the death of some prominent "Old Westminsters," and complained feelingly of the demolition of "Sutcliff's tuckshop" in Great College Street.

THE Technical Education Board of the London County Council has awarded (December 21) some three hundred junior county scholarships to boys and girls under thirteen years of age, most of whom are in attendance at public elementary schools. The scholarships carry free tuition at a secondary school for at least two years, together with maintenance grants averaging £10 a year.

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THE Cardiff University Settlement, which is doing good work in the East Moors, appears to be thriving: indeed, according to the *South Wales Daily News* (December 12), it is "likely to become one of the greatest social forces in Cardiff." Its primary aim is social, to promote the education and instruction of, and the means of recreation and enjoyment for, and to inquire into the condition of, the people of the poorer districts of Cardiff and adjacent places; to promote on the footing of friendly social intercourse the acquaintance of the people with past and present members of the Welsh and other Universities, and other persons friendly to the objects of the Association; and to provide for the residence in such districts of persons engaged in, or connected with, philanthropic or educational work; and to consider and advance plans calculated to promote the general welfare of the people of the poorer districts of Cardiff and adjacent places.

TETTENHALL COLLEGE, Wolverhampton, is to be placed on a new footing. It was founded by Independents forty years ago in order to provide in "a Nonconformist atmosphere" a sound and liberal education; but it has paid no dividends for many years. Nearly two thousand shareholders have surrendered their shares to the trustees, and, as soon as possible, the present company will be dissolved and all its property vested in a new corporation to be registered by licence from the Board of Trade.

THE Admiralty is understood to be contemplating a considerable extension of the Naval College now building at Dartmouth, in view of the projected increase of naval cadets. It is also stated that it is intended, as soon as practicable, to establish a torpedo depôt at Dartmouth, the old "Britannia," when vacated by the cadets, being utilized as torpedo store ship.

THE School Nature-Study Union is intended, amongst other objects, to promote addresses on Nature to children, school rambles and journeys under qualified guidance, school museums, and reading circles for teachers. Sir George Kekewich is President; the Rev. Claude Hinscliff, Bobbing, Sittingbourne, Hon. Secretary; and Miss Kate M. Hall, Curator of the Stepney Borough Museum, Whitechapel, Hon. Treasurer.

THE British Child-Study Association, which recently held its ninth annual meeting, has had another successful year. Mr. W. A. S. Hewins, M.A., succeeds Dr. Kimmins as President; Mr. Mark H. Judge, A.R.I.B.A., is Treasurer; and Miss Kate Stevens is Hon. Secretary. The lectures during the year have been alike interesting and practical.

UNIVERSITIES.

(*From our own Correspondent.*)

Oxford. As the streets are almost deserted by the gown, save where here and there an anxious faced figure moves white-tied to the Examination Schools to face the ordeal of *viva*, one is almost tempted into believing that Oxford is nothing but an ordinary provincial town. As a rule, December is not an over-pleasant month here, even if the weather be dry; but the floods of the term have left a general and pervading influence of damp in the atmosphere, and, according to the doctors, a kind of rheumatic malaria, so most of those who are not tied down by establishments and perambulators in what the house-agents call "the residential quarter" have gone or are going in search of sunshine and dry roads.

They will come back next term refreshed and ready once more to plunge into the great Greek question. Most of us knew that it would be reopened soon, though some imagined that it would be preceded by a recrudescence of the "women's degree" struggle.

The Greek question now appears in a somewhat modified form: the Honour Mathematician and man of Science are the persons to be relieved. The proposal is no longer that they should give evidence before entering upon a University course that they are fit to get Honours in Mathematics or Science, for that appears on the face of it rather absurd. What more would this mean than anticipating in a delightfully problematic manner in Responsions the verdict of the Final Schools? Nay, more—it would have meant allowing a man to become a specialist by displaying part of his special wares.

As the proposal stands now the Honour man (Science and Mathematics) is to be exempt from Greek in Responsions, and in Pass Divinity by (1) showing a high degree of proficiency in a modern language in the former school and by taking some "substituted matter" in the latter. The bone of contention will be what is meant by the "high standard," and, if the standard is really high, whether the specialist will benefit, *i.e.*, benefit in the sense that his labours (outside his special department) will be lightened. Perhaps, again, it is impossible to legislate for the unfortunate or the idle; but the case of the man who has shown a "high degree" of proficiency in French in Responsions and afterwards fails to appear—for there are who do not appear—in the Final Honour List of Mathematics or Natural Science, seems likely to present a difficulty. Must he begin *de novo* and pass "Smalls" in Greek? Well, the second week of February will see the question debated and temporarily decided. Meantime the opposers are not idle and influential committees have been got together, the members including several distinguished teachers of mathematics and science.

During the term we have also held meetings to discuss "advanced studies"—so that the specialist and his claims have been well before the Oxford public.

Lord Goschen's Latin reply to the address of the Commission which went down to admit him as Chancellor of the University was recently published in the *Oxford Magazine*, and shows much of the elegance and facility which are so wanting in the majority of modern Latin speakers. After alluding gracefully to the great abilities of his predecessor, Lord Goschen continued: "Quarum rerum haud immemor, nescio an vires meae, senectute jam adveniente, sufficere possint ad honorem tam gravem, tam conspicuum sustinendum. Quinquaginta jam peracti sunt anni, amici carissimi, ex quo de Alma Matre nostra alumnus juvenis decessi. Mox a literis et philosophia ad negotia diversa, ad aerarii procurationem, ad rerum navalium administrationem, ad frequentes in Senatu conciones avocatus, raris tantum intervallis studiis illis amoenis vacavi quibus olim intra muros venerandos Academiae nostrae delectabar. Nihilominus, negotiis ejusmodi immersus plus semel consulentibus interfui qua ratione juventus nostra Britannica liberaliter educatione et doctrina esset instituenda, et quo modo, in praesenti tempore, antiqua studia cum scientiae luminibus melius conciliari possent."

During the month we have had several distinguished visitors from outside. Mr. Haldane was the chief speaker at a meeting on the great fiscal question, and there were free-trade lights and luminaries, University and civic, on the platform. Then the Ashmolean and Mathematical Society invited down the great Prof. Perry, who came apparently not to bless Universities—to wit, Oxford and Cambridge—and performed his mission with great self-satisfaction and a wealth of highly coloured epithets. We were informed *ex cathedra* that no one but men of science had a "wide outlook," and that observation and experiment were the only instruments of culture. Literature, old and new—but especially old—was banished into outer darkness. The classics had done nothing for Prof. Perry; *ergo, ergo, ergo.*

Even the *Oxford Times*, which only a few weeks ago had been moved to indignation by the Bishop of Stepney's deprecatory allusion to the much advertised "practical man" in matters of education, was stirred to revolt by Prof. Perry, and hastened to the defence of the Oxford curriculum.

We confess to being rather weary of these men of science. Let us have doctors and engineers and electricians who know their business, but save us from a world of men born amid formulæ, weaned in museums, and nurtured in laboratories.

The Craven Fellowship fell this year to Mr. John Jenkins, the newly elected Fellow of Magdalen, and grants were made from the Craven Fund to two other researchers, one of whom, Mr. E. O. Winstedt (of Juvenal fame), has since being elected to a Senior Demyship at Magdalen College, where, five years ago, he had obtained a classical scholarship from Magdalen College School.

Merton have been rearranging their teaching staff since the appointment of Mr. Bowman to the Wardenship, and have appointed two new tutors, Mr. H. W. Garrod and Mr. W. H. Fyfe. The Professor of Poetry is one of the Oxford professors who can count on a good audience, and there was considerable disappointment when, owing to ill-health, his lecture on "The Sublime" was postponed. However, he recovered sufficiently to come before the end of the term, and must have been gratified that, even at a time when every one is busy, the postponement had not decreased his audience. The appointment of Dr. McDougall, of Cambridge, to the recent Wilde Readership in Psychology has stirred up a rather acrimonious controversy, partly based on the fact that Dr. McDougall is pre-eminently an experimental psychologist, and experimental psychology is barred

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by the terms of the statute creating the Readership; partly also by the old grievance that Oxford men are habitually passed over for Oxford posts in science. As a poet sings in the *Oxford Magazine*:

"We hold," said the others, the Free Trade folk, "the consumers are all who matter.
The more we devour the imported stuff the wiser we grow, and fatter.
If prices are low for the native crop, that leaves us more money, you see,
To spend on enticing the dumped produce from the generous Cam countrie."

Oxford did not figure preeminently in the Encyclopædia Class List, but that has not saved us from being inundated by a goodly proportion of the final telegraphic appeals to buy the supplementary volumes. Some of us have even succumbed to the miraculously importunate widow, and are wondering where to put the books when they come.

In matters athletic there have been the "Trials," which did not produce a good race nor show that we have any remarkable material for next term's crew. Our athletes defeated an unrepresentative L.A.C. team very easily, but "across country" we were, as anticipated, easily beaten by Cambridge.

Against this we may set the glorious victory at Queen's Club in the Rugby match, when at one and the same time we broke the Cambridge record and upset the prophets.

We are all very proud of R. E. Foster's achievements in Australia. To have made the highest score in the Inter-Varsity match, a double century against the Players, and the record score in a test match is a triple performance to which even Mr. C. B. Fry has not attained.

(*From our own Correspondent.*)

Cambridge.

THE proposal to appoint another Syndicate to consider the whole question of our examinations provoked little excitement, and no substantial opposition was forthcoming at this initial stage. When the Syndics have presented a report the plain members of the Senate will be allowed a voice, and—what is of more effect—a vote.

The Senate has adopted the proposal to create a new special examination in Geography, and also to continue the grant which enables the existing Readership to be maintained. The number of men qualified to teach the subject is very small; and after the first rush of men to pass what will be considered an easy test for a degree the subject is by no means unlikely to resume the back seat which it has occupied so long.

Prof. Howard Marsh, the new Head of the Surgical Department, has been earning golden opinions by his courtesy, geniality, and effective modes of teaching. He constitutes a remarkable exception to the dictum of the late Master of the Hall, that imported professors generally expect to come in duty free.

An excellent scheme has been started by Mr. Strangeways, of the Pathological Department, to organize a small special hospital in Cambridge for research purposes. Only one class of case will be taken at a time, and investigations into the nature of the disease will be made from the medical, physiological, and bacteriological points of view. A very small sum of money is needed, and the results would undoubtedly be very cheaply purchased, when so many skilled workers and research students are ready to give their services as a labour of love.

The Senate has offered to Lord Braybrooke an address congratulating him upon the approaching fiftieth anniversary of his appointment to the Mastership of Magdalene. In this case the complement is no empty one; there is not a Cambridge resident who would not cordially endorse every flattering word said by the Public Orator in the Senate House. A strong man of decided views, the Master may have had many opponents, but an enemy never. He has played the game and given an example to those who have to follow him.

We heard a great deal some year or so ago of the desirability of attracting University men to enter the Army, but the wishes of the Government have not yet taken a material form. Men have come to the University relying on the promises of a late War Minister, and now they are likely to fall between two stools, for, be it remembered, the conditions of University life and training are not specially adapted to the attainment of success in the examination served up to the present generation of Army candidates. "De moribundis nil nisi bonum." The condemnation of the old system surely implies the duty of creating a new one.

One leading defect of our University system is the difficulty of initiative on the part of private members of the Senate. The Council doubtless do their best to frame graces which embody the wishes of the majority; but it is absolutely impossible for any legislation to be brought forward, or for any amendment to be made, unless it first meets the approval of a majority of the Senate. Even in the elections, custom has decreed that two tickets shall be promulgated from some source unknown, and, like sheep, the plain members of the Senate flock in and vote according to printed lists. Among other topics the following may be suggested as fitting ones to occupy the attention of our rulers in the near future:

1. The state of the lodging-houses.—Some colleges, appreciating the difficulty, called in their external investments and proceeded to make further and better accommodation for their men: Sidney, Pembroke, Caius, Emmanuel, and Jesus have taken Time by the forelock. Some colleges, such as Clare and Trinity Hall, are precluded by the nature of their sites from doing much; but Trinity, Christ's, Queens', and St. John's have room enough and to spare.

2. The allotment of fees among the staff in certain departments.—This is a difficulty which cannot long be shirked. The question comes into practical politics somewhat in this way. A growing department is necessarily starved by a University which would do more if it had a longer purse; a competent and energetic head makes the department self-supporting or more, with the result that the virtual, as opposed to the official, income of the staff is a source of envy to outsiders. For a time the thing works beautifully, but it is not hard to imagine that at a particular crisis the system is one which requires a very delicate hand on the reins. Luckily the departments where the fee system prevails have been presided over by men in whom the University places absolute and unrestricted confidence—men who have borne the burden and heat of the day, risking adverse criticism, taking bold courses, and in every case obtaining success. But the difficulties will be in the future.

Our defeat by Oxford in the football field was a great disappointment. The Cambridge team, up to then unbeaten, came across a side of which every man was playing at the top of his game.

The politicians have not yet found a successor to Sir John Gorst: in fact, it is not known whether that gentleman will relinquish his seat without a struggle.

London.

THE University has issued an appeal for funds to enable it to undertake the "preliminary" scientific teaching (as distinct from the hospital work) of the London medical schools, which it is proposed to transfer and to centralize in an Institute of Medical Science under the control of the University.

The University has accepted an invitation from the Technical Education Board of the London County Council to inspect and report upon the provision for the teaching of modern languages in certain secondary schools in the county.

The annual report of King's College (December 17) records satisfactory progress in all the departments of the college and school, a high percentage of successes in the examinations of the University of London, which are acting as a great stimulus to the several faculties, and a general increase in numbers, the total number during the academical year being 5,821. The response to the appeal issued last year has largely reduced the debt, but £10,000 still remains to be cleared off.

Liverpool.

SIR EDWARD LAWRENCE presided (December 5) at the first meeting of Liverpool University Court. The ordinances framed for the government of the University were approved, and it was stated that the University (founded twenty-two years after the inception of University College, Liverpool) would start with property worth half a million sterling. £170,000 had been subscribed towards the University movement. An appeal was made for increased financial support.

Manchester.

THE new session opens with a larger number of students than the Victoria University ever had before. The matriculations of new students number 335 (240 at Manchester, and 95 at the Yorkshire College). The day students at Owens College in Arts, Science, and Law are 802 (586 men and 216 women), in Medicine 317 (of whom ten are women). The Vice-Chancellor, presiding at the University Court

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(December 10), said the numbers showed no adverse effect from the recent changes in the constitution. Students from all parts of the world were engaged in original scientific research under professors of the University. Valuable work was being done by the Joint Board of Manchester and Liverpool Universities and the Yorkshire College. The new scheme of the Lancaster County Council with regard to the award of scholarships was one of the most useful forward steps recently taken.

A report from the Senate on the new Faculty of Theology, proposing that no external course of lectures should be approved unless given by a member of the teaching staff of some institution recognized for this purpose by the Court, was adopted.

A draft constitution of the Faculty of Commerce was adopted. Bachelors and Masters of Commerce are to be written as B.Com. and M.Com., and an advisory council is to be formed to act in co-operation with such bodies as the Manchester Chamber of Commerce.

On the motion of Prof. Tout, an advisory committee was appointed for University Extension work. Prof. Tout pointed out the importance of Extension work by a University like theirs, situated in the midst of a population of millions. He would be glad for suggestions from Yorkshire and from Liverpool as to the organization of such work.

Victoria—Yorkshire College.

At the annual meeting of the Board of Governors of the Yorkshire College (December 7), Lord Allerton presiding, the Marquis of Ripon was elected President. It was decided to purchase the Woodhouse Lodge estate (£5,000 to £6,000), adjoining the college and affording means of future extension. Only some minor points delay the grant of a charter, such as the formation of the Court and the composition of the Senate—and the name. ["The title 'University of Leeds,'" writes Mr. E. Basil Lupton (*Yorkshire Daily Post*, December 9), "seems to me simpler, free from objection, and in accordance with precedent"—an opinion that will have weight.] Donations amount to £36,000, but £100,000 is wanted. A resolution was passed authorizing the Council to make any alterations in the draft charter which might appear to them desirable, and to promote a Bill for the incorporation of Yorkshire College in the University when founded, and to take such steps as would tend to secure the foundation of a University for Yorkshire.

Glasgow.

Prof. Raleigh submitted to the University Court (December 17) a statement as to the need of an adequate and distinct provision for the teaching of the English language in the University. The arrangement whereby English Language and English Literature were committed to the charge of a single professor was no longer possible. The Court sympathized with Prof. Raleigh's views, and promised them the earliest consideration.

Prof. A. C. Bradley, Professor of Poetry at Oxford, formerly Professor of English Literature at Glasgow, was presented with his portrait, painted by Mr. George Henry, R.S.A., on behalf of the professors and students of Glasgow (December 17). Principal Story accepted the picture from Prof. Bradley as a gift to the University.

Aberdeen.

There is a general increase of 21 students this year—811 (662 men, 149 women) as against 790 (656 men, 134 women) last year. As regards the various faculties, there is an increase of 15 (all men) in Medicine and 18 (including 3 women) in Science, while there is a decrease of 9 in Arts, 1 in Divinity, and 2 in Law. The Arts figures are 374 (245 men, 129 women), as against 383 (266 men, 117 women) last year. "From these figures," says *Alma Mater* (the University magazine), "it will be observed that, compared with last year, there has been a total decrease of 21 in the number of men. This is certainly rather striking, but it is absolutely startling to learn that of the 115 first-year students almost exactly half are women, and that the number of men beginning their course this year is considerably less than that in the present Tertian class. It is difficult to explain the decrease in the number of men, for one would think that the Carnegie Benefaction would have caused an increase."

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CURRENT EVENTS.

Fixtures.

The Half-yearly General Meeting of the members of the College will take place on Saturday, January 23.

* * *

Prof. Adams will deliver his second course of lectures (free to teachers) at University College, London, on January 16, 23, 30; February 6, 13, 20, 27; March 5, 12, 19. The subject will be "Temperament, Type, and Character in Education." Admission cards from the Professor, 5 Clement's Inn, W.C. Give full name and address, and name and address of the school in which the applicant teaches.

* * *

At Bedford College for Women, Prof. Patrick Geddes will commence a course of lectures on "Geography and the Natural Sciences," January 25, 5 p.m.

* * *

The Kearton Nature Photographs of Birds, Beasts, Reptiles, and Insects will be exhibited at the Modern Gallery, Bond Street, W., January 2–12, 10 a.m. till 9 p.m.; and Mr. R. Kearton, F.Z.S., will deliver limelight lectures to children each afternoon, and to adults each evening.

* * *

The Technical Education Board of the London County Council will hold a Conference of Teachers of Elementary and Secondary Schools and Technical Institutes at the South-Western Polytechnic, Manresa Road, Chelsea, on January 7–9, 11 to 1 and 2 to 4 p.m. The subjects will be the teaching of Geography, Modern Languages, Art (in secondary schools), and Geometry (practical work). Presidents: the Chairman of the Technical Education Board, the Hon Sir John Cockburn, the Hon. W. N. Bruce, Principal Sir Arthur Rücker, Sir Charles Holroyd, and Prof. Perry. Papers will be read by Mr. H. J. Mackinder, Dr. A. J. Herbertson, Dr. E. R. Edwards, Mr. F. B. Kirkman, Prof. Rippmann, and others. Two exhibitions, opened January 5 and continued during the week—one geographical, the other artistic (including drawings and painting from London secondary schools). Tickets (free) from Dr. Kimmins, 116 St. Martin's Lane.

* * *

A Joint Conference of Educational Associations will be held at the City of London School, the Right Hon. A. H. Dyke-Acland in the chair, on January 11 at 11.30 a.m.

The participating associations are the Association of Head Masters of Preparatory Schools; the College of Preceptors; the Head Masters' Conference; the Assistant Masters' Association, Incorporated; the Association of Assistant Mistresses, Incorporated; the Association of Head Mistresses, Incorporated; the National Union of Teachers; the Private Schools' Association, Incorporated; the Teachers' Guild of Great Britain and Ireland, Incorporated (with its allied societies, the Birmingham Teachers' Association and the Friends' Guild of Teachers). All interested in the discussions are invited. The Conference will discuss certain questions bearing on the unification of the educational system: (1), at 11.30 a.m., the ages at which it is desirable that transition from primary to secondary schools and from one type of secondary school to another should be made; (2), at 1 p.m., the extent to which the curriculum in one type of school should be correlated with that in other types; (3), at 3.30 p.m., the best method of discovering the child of scholarship form at the appropriate age for transition from primary to secondary schools; (4), at 5 p.m., the best method of adjusting the elementary pupil-teacher system to elementary schools. No resolutions. *Conversazione* (for

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members of the associations) at Skinners' Hall, Dowgate Hill, in the evening. Cards of invitation from Joint Conference, 74 Gower Street, W.C.

* * *

THE Teachers' Guild will hold a conference in the same building on January 12–13, under the presidency of Sir Oliver Lodge, President, and Dr. S. H. Butcher, ex-President, of the Guild. Programmes on application. Members of the Joint Conference will be welcome.

* * *

THE Annual General Meeting of the Incorporated Association of Head Masters will be held at the Guildhall on January 12 and 13.

* * *

THE Annual General Meeting of the Incorporated Association of Assistant Masters in Secondary Schools will be held at Mercers' School, Holborn, E.C., on January 9.

"Social meetings for informal discussion" will be held on the third Thursday of each month, beginning on January 21, at 8.30 p.m., at the Bedford Head, Tottenham Court Road.

* * *

THE annual meeting of the Mathematical Association will be held at King's College, London, January 23, 2 p.m.

* * *

THE Women's Industrial Council will hold a conference "to consider the desirability of establishing schools for training girls of the industrial class in the care of children," in the Board Room of the London School Board, Victoria Embankment, on January 29, at 3.30 p.m, Mrs. Creighton in the chair. The Council hope that all institutions working to promote the welfare of women will send representatives.

* * *

SIR ROBERT B. FINLAY will deliver his Rectorial Address at Edinburgh University on January 21.

* * *

THE St. Bride Physical Training College for Ladies (Bride Lane, Fleet Street) commences courses on January 7. Special arrangements for teachers.

* * *

UNDER the auspices of several Greek educational societies recognized by the State, an Educational Congress will be held in April, 1904, at Athens. There will also be an exhibition of educational books and apparatus, which will include an international section. Foreign contributors should deliver their exhibits in Athens by February 14. Detailed information from the Secretary, M. G. Drossinis, 42 Rue de l'Académie, Athens.

Honours.

OXFORD UNIVERSITY has conferred the honorary degree of D.C.L. upon Mr. Henry Wilde, F.R.S., the founder of the Wilde Readership and of the John Locke Scholarship in Mental Philosophy; and the honorary degree of M.A. on Mr. John J. Manley, Curator of the Daubeny Laboratory, Balliol College.

* * *

THE University of Cambridge has conferred the honorary degree of D.Litt. on M. Théophile Homolle, Director of the French School at Athens.

* * *

MR. J. A. EWING, M.A., LL.D., F.R.S., late Professor of Mechanism and Applied Mechanics, Cambridge, and Mr. Karl Pearson, M.A., LL.B., F.R.S., Professor of Applied Mathematics in University College, London, and formerly Fellow, have been elected to honorary Fellowships at King's College, Cambridge.

* * *

SIR JOHN EVANS, K.C.B., has been elected an honorary Fellow of Brasenose College, Oxford.

* * *

THE Nobel Prizes have been awarded this year as follows:—Peace, Mr. W. R. Cremer, M.P.; Physics, divided between Prof. Antoine Henri Becquerel (Paris) and M. and Mme. Curie (Paris); Chemistry, Prof. Arrhenius (Stockholm); Medicine, Prof. Finsen (Copenhagen); Literature, M. Björnstjerne Björnsen (Christiania). Each prize is worth about £8,000.

* * *

M. OSIRIS, who in 1900 placed 100,000 fr. at the disposal of the Syndicate of the Paris Press as a prize for the most noteworthy scientific discovery, now suggests that the sum should be awarded to M. and Mme. Curie.

Endowments and Benefactions.

THE City of London College Extension Fund has received a donation of £150 from Lord Strathcona, in recognition of the "most valuable work" of the institution "in the interests of practical education."

* * *

THE offer of the trustees of the will of the late Rebecca Flower Squire to give £5,000 Consols to endow additional Law scholarships has been accepted by Cambridge University.

* * *

UNDER the will of the late Mr. Benjamin St John Attwood-Mathews, of Pontrilas Court, Hereford, and Llanvehangel Court, Monmouthshire, the original founder of the Alpine Club, £5,000 goes to the general funds of Cambridge University, and £5,000 to Trinity College, Cambridge.

* * *

THE Max Müller Memorial Fund (£2,400) is to be held in trust by the University of Oxford for the promotion of learning and research in the history, archæology, languages, literature, and religion of Ancient India.

* * *

MR. SHYAMAJI KRISHNAVARMA proposes to offer the University of Oxford £1,000 to found a Spencer Lectureship, in memory of Mr. Herbert Spencer.

* * *

A GENTLEMAN, who wishes to remain anonymous, has given, through Prof. Starling, the sum of £50,000 to University College, London, for the promotion of higher scientific education and research.

* * *

THE donor of the Denmark Hill site for the new buildings of King's College Hospital is the Hon. W. F. D. Smith, M.P., who is Chairman of the Removal Committee and Treasurer of King's College. The name of his father, the late Mr. W. H. Smith, M.P., who was for many years Treasurer of the Hospital, will be permanently associated with the central administrative block.

* * *

THE trustees and executors of the late Mr. S. R. Zunz have given £10,000 to the King's College Hospital Removal Fund, and "will probably see their way to make a further contribution towards the equipment and maintenance of the Annie Zunz Ward."

* * *

MR. GOSCOMBE JOHN, the sculptor of the Bala statue of the late Mr. Tom Ellis, M.P., has presented a plaster cast of it to University College, Aberystwyth. Mr. Ellis was one of the first students of the College, and he was subsequently a member of the College Court and Council and a Warden of the Guild of Graduates.

* * *

MR. H. HARRISON, of Blackburn, will contribute permanently £52. 10s. a year for instruction in Chinese in the Manchester University Faculty of Commerce.

* * *

PROF. WHITE, University College, Bangor, has been informed that the King intends to present to the College at an early date a stag from the Royal preserves. He has also

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received for the zoological museum a considerable variety of important specimens from several donors, and £10 from Mr. H. R. Davies, Treborth.

* * *

THE late Mr. Seale-Hayne, M.P., has provided by will for the establishment of a college of science, art, and agriculture near Newton Abbot, especially for students from the county of Devon. It is thought that about £150,000 will be available. Mr. Seale-Hayne's fine collection of pictures may be hung in the gallery of the proposed college

* * *

MR. JUSTICE BUCKLEY has founded a scholarship in Political Economy at his old school, Merchant Taylors'—£50 a year for three years.

* * *

THE late Mr. Alfred L. Cohen, L.C.C., bequeathed £500 to the Jews' Free School; £100 to the Jews' Infant School, Commercial Street, Whitechapel; £500 to the Jews' College, Guilford Street; £50 to the Orphan Working School; as well as considerable sums to a number of hospitals and other charitable institutions.

* * *

THE *Matin* has placed 30,000 fr. at the disposal of Prof. d'Arsonval to enable him to continue his researches on the properties of radium.

Scholarships.

JESUS COLLEGE, Oxford, offers several scholarships (£80–£100) and exhibitions (£30–£60) in classics, mathematics, modern history, or natural science. No age limit. Examination begins January 12. Particulars from the Senior Tutor.

* * *

EXETER COLLEGE, Oxford, offers a scholarship in modern history (£60; age limit, 19); and an exhibition (£30; no age limit). Examination begins March 15. Particulars from the Rector.

* * *

MODERN Language Entrance Scholarships were recently offered at King's, Caius, Christ's, and St. John's Colleges, Cambridge. Unfortunately the supply of duly qualified candidates is still very small.

Appointments and Vacancies.

THE REV. CANON BELL, M.A., late Master of Marlborough, has been appointed Principal and Professor of Theology in Queen's College, London.

* * *

THE REV. W. E. COLLINS, M.A., Professor of Ecclesiastical History in King's College, London, has been appointed Bishop of Gibraltar.

* * *

SIR COURTENAY P. ILBERT, M.A., K.C.S.I., has been appointed Romanes Lecturer for 1904.

* * *

SIR JOHN SCOTT BURDON-SANDERSON, M.A., M.D., has resigned the Regius Professorship of Medicine in Oxford University. He was transferred from the Waynflete Chair of Physiology (of which he was the first occupant, 1883–95) on the resignation of the late Sir Henry Acland (1895).

* * *

PROF. PAUL VINOGRADOFF, of the University of Moscow, has been appointed Corpus Professor of Jurisprudence at Oxford. He is the author of an elaborate series of essays on "Villainage in England," published at the Clarendon Press in 1892.

* * *

MR. J. SHIELD NICHOLSON, D.Sc., Professor of Political Economy in Edinburgh University, has been appointed Gilbey Lecturer in the History and Economics of Agriculture in Cambridge University for three years (1904–06).

DR. HOBSON, F.R.S., has been appointed the first Stokes Lecturer, and Dr. Baker, F.R.S., the first Cayley Lecturer, at Cambridge.

* * *

SIR ARCHIBALD GEIKIE succeeds Sir Michael Foster in the office of Secretary of the Royal Society. The other Secretary is Prof. Larmor.

* * *

AT King's College, London, Mr. S. A. F. White, M.A., Demonstrator in Natural Philosophy, has been appointed Professor of Mathematics; Mr. E. F. Herroun, Assistant Professor of Physics; Mr. J. B. Dale, M.A., Assistant Professor of Mathematics; and Mr. C. A. Smith, Demonstrator in the Civil and Mechanical Engineering Department.

* * *

MR. H. J. MACKINDER, M.A., has been appointed Director of the London School of Economics and Political Science, in succession to Prof. Hewins.

* * *

MR. R. H. YAPP, M.A, of the Botanical Laboratory, Cambridge, has been appointed Professor of Botany in University College, Aberystwyth. For the last two years Prof. Yapp has been one of the Secretaries to the Botanical Section of the British Association.

* * *

THE Chancellorship of the University of Glasgow is vacant by the death of the Earl of Stair. Lord Kelvin is said to be his probable successor.

* * *

MR. J. H. DOBSON, of Crewe, has been appointed assistant to the Chief Organizer and Director of Higher Technical Education in the new University of the Transvaal.

* * *

MISS MARGARET A. GILLILAND, M.A. (Lond.), Senior English Mistress at the Clapham High School (Girls' Public Day School Company), has been elected by the Haberdashers' Company Head Mistress of Aske's School for Girls, Acton.

* * *

MR. HERBERT TOMLINSON, F.R.S., has resigned the Principalship of the South-Western Polytechnic, Chelsea.

* * *

MISS F. LOVIBOND, of Bedford College for Women, lately Sanitary Inspector at Rochdale, has been appointed Woman Sanitary Inspector to the Borough of Holborn.

Literary Items.

MR. JAMES J. GUTHRIE, of the Old Bourne and Pear Tree Presses, and Editor of *Books and Plates* (quarterly), has established the Harting School (L. & S.W. Railway, Midhurst branch), to give workshop training in artistic printing.

* * *

MESSRS. LONGMANS announce as nearly ready a final volume of Dr. Bright's "History of England," covering the Victorian period, and Book I. of Prof. Tout's "First Book of British History"; also a work on "Educational Theory viewed in the light of Contemporary Thought," by Prof. M. V. O'Shea, of Wisconsin, and "An Apology for certain Methods of English Higher Education," by T. Pellatt.

* * *

MESSRS. GINN & CO. announce another volume by William J. Long, the most sympathetic and charming of present writers on animal life—"A Little Brother to the Bear, and other Animal Studies."

* * *

MR. BRIMLEY JOHNSON is publishing "Thoughts on Judaism," by Lily H. Montagu, "a wholly personal aspect of convinced religious thought and emotion," in sympathy with the liberal movement.

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Mr. H. Thiselton Mark is devoting all the profits of his work "The Teacher and the Child" (which we noticed last January) to the funds of the Congregational School at Caterham. Three editions appeared in England and one in America (Fisher Unwin).

* * *

Mr. Fisher Unwin publishes an "autumn season" M.A.B. (which, being interpreted, is "Mainly about Books"), with interesting articles and numerous good portraits of authors, at the nominal charge of one penny.

* * *

Messrs. Jack will commence the issue of the Old Testament portion of the "Century Bible" with "Genesis," by Prof. Bennett, New College, London, in January. "Judges and Ruth," by the Rev. G. W. Thatcher, B.D., Mansfield College, Oxford, will follow in February; and other volumes monthly.

* * *

The reports of the Mosely Commission will be published about Easter.

* * *

The *Record* for October is packed full of interesting matter, with many good illustrations. Special attention may be drawn to "a general review of the problem" of the training of teachers, the importance and urgency of which are emphasized.

General.

Mr. J. W. Welsford, of Harrow School, warned by the disastrous Eton fire, has set up a complete automatic fire alarm installation in his house.

* * *

Mr. T. King, C.B., late Senior Chief Inspector of Schools, we regret to record, has not long survived his Birthday honour. He has succumbed to influenza.

* * *

Dr. Kasasis, Professor of Jurisprudence and Rector of the University of Athens, was entertained at dinner by a large and distinguished company of friends and former students at the Criterion (December 18).

* * *

Under the auspices of the Modern Language Association, Sir Hubert Jerningham delivered (in French) an eloquent appreciation of Alexandre Dumas *père* at Queen's College, London (December 12). The French Ambassador was present.

* * *

The Albert Fry Memorial at University College, Bristol, is to take the form of "a tower and buildings"—"a handsome completion of the buildings as they now stand." The fund amounts to £1,835.

* * *

The Conference on the Training of Teachers, at Manchester (November 23), was much divided in opinion, and passed no resolution.

A MARLBOROUGH CHALLENGE TROPHY.

In our September number (page 387) we briefly referred to Mr. Bell's parting gift to Marlborough. We now have pleasure in quoting the following account of it from our bright contemporary, the *Captain*, which also reproduces a fine photograph of the trophy:—

"In recent years many challenge cups and other prizes have been given by liberal Marlburians and other friends for the encouragement of cricket, football, hockey, and other kinds of athletic exercise. There is a keen competition among the Houses for these prizes, especially for the Pollock Shield, given by the present Head Master of Wellington College, to be held by the House which is most successful in the sports of the year. The marks for these are so arranged that the younger members of a House may help to win the Shield for it. The result is wholesome, as, besides encouraging athletics, such prizes help to diffuse widely a generous feeling of public spirit and loyalty to the Houses. On the other hand, they have increased the tendency to regard excellence in athletics as the chief interest in schoolboy life, and the brainwork as a matter of secondary importance.

"Prizes given on the usual lines for school work, while useful to encourage and reward industry, yet have their defects: they stimulate only individual boys, and may beget in them an unwholesome hunger for marks; the honour of the prize affects only the winner, and the competition for it tends to foster a type of character which does not command the admiration and sympathy of companions. Some of these defects might be remedied if into the competition for school prizes we could infuse some of that generous, unselfish public spirit which produces admirable results in some games, athletic exercises, &c. Such were the feelings which led the late Head Master of Marlborough to offer, as a parting gift to the school, a prize which will be awarded each year just before Prize Day to the House which has gained most distinction in the work of the twelve months preceding; 'its merit to be estimated by a scale of marks assigned to the different prizes, scholarships, &c., on the analogy of the mark-scale of the Pollock Shield Competition.'

"The prize is a bronze statuette, representing St. Michael, designed by Mr. E. Roscoe Mullins, O.M. The plinth will bear small shields to receive each year the name of the winning House."

OPEN COURT.

Thay say . . .
Quhat say thay?—Lat thame say!

LEAVING CERTIFICATES.

By J. L. Holland, B.A., St. Olave's Grammar School.

The Board of Education is following the recommendations of the Commission of 1895 so closely that an inquirer anxious to know what the next step will be in the administration of secondary education might confidently look to find it in the Commission's Report. As was pointed out in the August issue, the Registration Order was a signal proof of this, and we have now another to instance in the reference to the Consultative Committee of "Standards of Examination, particularly in reference to boys destined for certain professions." That Body is clearly not to be the *nominis umbra* which some people prophesied a short year ago; "after taking the advice of the Consultative Committee" is a formula that we are probably destined to hear on many important occasions in the future.

The reference quoted may safely be interpreted to mean "leaving certificates." These, indeed, we are likely to find, are no further off than the Committee's Report. The University of London is already in the field; and, a fact more significant still, the Military Education Division of the War Office has forestalled the Committee's judgment in one direction by recommending that the possession of a leaving certificate granted after a certain minimum attendance (apparently three years) at a properly inspected school be a necessary qualification for entrance to Sandhurst and Woolwich.

The secondary teacher, distracted as he is by the sixteen—or is it seventeen?—professional entrance examinations, will incline to utter a benediction over any change. But before we elect for a uniform leaving examination it will be well to make sure that we are not driving out ill with worse. The advocates of such uniformity can hardly discern much to encourage them in some of the results of the system on the other side of the Border. After fifteen years' experience in Scotland the mischievous rivalry between school and school for points in the contest is still in full swing, with the consequent over-pressure of the immature and ill-prepared candidates who are forced into the lists. "Inquiries show that under existing circumstances it is no uncommon thing for boys, and even for girls, to spend five

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or six hours nightly on home lessons"—such is the testimony of Sir Henry Craik.

The truth of the matter is that, so long as examinations are merely written tests imposed upon the schools from without, they will be attended by a train of necessary evils, many of which will be intensified by any standardization which advisory committees may attempt. Education, as no one but the teacher seems nowadays to remember—and he is often tempted to forget—begins when child and teacher come face to face: syllabuses, curricula, time-tables, are external things—expedients sometimes, but often impediments.

Now, this contact of teacher and taught is injured by the current examination system in three ways, at least. First, it affects adversely the spirit in which the joint task is carried through. From this point of view, Mr. Warde Fowler in the *Times* the other day advocated the abolition of Moderations at Oxford. "It is my firm conviction," he said, "that so long as it exists the undergraduate will never shake himself free of the idea that at school has silently taken possession of his mind—that education and learning both mean preparation for an examination." These undergraduates are, many of them, the flower of our secondary schools; could there be a more damning verdict upon the liberal education we have given them? Secondly, the examinations affect the manner of the teaching. Facility in writing answers is all-important; and, therefore, as soon as anything has been learnt, the pupil is set to reproduce it. The result sometimes tempts one to doubt Bacon's maxim that "Writing maketh an exact man"; of that other maxim, "Reading maketh a full man," we permit ourselves but little experience. Finally, the system affects the matter of instruction. The outlook upon a subject may be compared to the field of vision: there is a clearly defined central portion surrounded by a marginal area. The centre of the subject is the part which any decent text-book will supply, and which all examinees may fairly be expected to know. But in the margin the teacher is at home; here is the source of his own interest; and here his personality has free play. The external examiner, careful to avoid obloquy, must shape his questions to the beaten paths; and teacher and pupils, diligently plodding in his wake, feel any departure therefrom is sheer truancy.

It is at present the fashion to find a cure for these ills in a combination of examination and inspection. But, though experienced and sympathetic inspection is of the very greatest service, it remains true that the power of an external authority that both examines and inspects is well nigh irresistible. "Every school in Scotland is under our influence," said Sir Henry Craik to the Commissioners of 1895, "and we would simply set an iron rule upon them as to what they were to teach, and there would no possibility of getting beyond that." If the diagnosis be correct, the remedy must be sought in measures that will restore to the teacher his due responsibility for aims and methods—a responsibility of which many forces now let loose upon education, besides external examinations, are tending to deprive him. In Mark Pattison's phrase, the examinations must follow the schools, and not the schools the examinations. With this touchstone we could wish all schemes for new certificates to be tried.

But what changes can be proposed which will mitigate the evils we have indicated as lying at the root of the examination system, which will give back to the teacher his due responsibility, and will at the same time be practicable under the new conditions likely to obtain in education? We will venture to make four suggestions not new in themselves—which seem to be worth consideration in the discussions now going forward; suggestions, moreover, which could easily be put into practice by the present Inspecting and Examining Bodies.

First: the actual examination should be put in its proper subordinate position. The candidate for a leaving certificate should be required to produce a record showing that he had undergone a satisfactory course of study and that at no point in that course had he sunk below a certain level of performance as attested by the results of the internal examinations of the school. Further, the present perfunctory certificate of good character should be replaced by a careful report drawn up in concert by the teachers responsible for his instruction.

Second: the conception of a uniform examination, in the sense that all candidates everywhere take the same paper in a subject, should be abandoned. The papers should vary from school to school, according to the approved syllabuses of the teachers. Uniformity of standard it would be the business of the inspectors to secure in discussing the teacher's syllabus with him. Moreover, the inspectors, if they do not themselves actually set the examination papers, should, at any rate, be active members of the Board of Examiners constituted for any school within their province. In this way the teaching would lead up to the examination naturally, and without demanding of the teacher an unreasonable sacrifice of his own ideas.

Third: it is essential that the school staff should have a clearly defined status in relation to the examination. The papers by which they had from time to time tested the progress of the candidates might be submitted to the Examination Board; or each teacher might be allowed to send in one or two model papers as an indication of his method of treatment. The Board might also have among its members a teacher appointed to represent the staff of the school, through whom it would be possible to appeal against the paper set in any subject to a Central Board of Moderators, constituted from examiners, inspectors, and teachers. In cases where such an appeal was upheld, the moderators ought to be empowered to take any steps they might think desirable, even to the extent of directing that the certificate should be issued without regard to the result of the particular test to which objection had been successfully taken.

Fourth: the certificate should be granted jointly by the examining and inspecting body and by the school. The three requirements—an adequate course of study, a recommendation from the teachers concerned, and a satisfactory examination—should be clearly stated upon the face of the certificate, which should not be granted unless all three were satisfied.

Since the passing of the Education Act of last year, the work of the Board of Education and of the Local Authorities in laying down the lines of future administration has been going on with great rapidity. The powers without are organized and organizing; but the teachers within are still, for the most part, a disunited array. Opportunities of formulating collective opinion upon such professional questions as we have here discussed are few, and advantage is not always taken of those which exist or arise. Such an opportunity the present issue provides,

> **And we must take the current when it serves,**
> **Or lose our ventures.**

THE DIPLOMA EXAMINATIONS.

The Revised Regulations.

By Gilbert J. Pass, Craufurd College, Maidenhead.

The readers of the *Educational Times* who are interested in the Diploma Examinations will see with satisfaction that, as a result of the correspondence started last March, the Council has amended the regulations.

In the first place, the date of the practical examination has been changed. Instead of being held only in July, it will in future take place in February, May, and October. This will naturally be a considerable convenience to many teachers who have hitherto found it difficult to secure a day in term time to go up for the examination.

Another boon is conferred by changing the date of the Diploma Examination from July to the first week in September; for teachers will then have the double advantage of having had the

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summer holidays for reading and of taking the examination during the vacation.

It is, however, in the alteration of subjects that one feels somewhat disappointed. English has been introduced, but only as a *subject*, not as a *branch*. Surely this is inadequate. In a subject such as English, which embraces so many sections—history of the language, literature, Anglo-Saxon, &c.—enough material could certainly be found to form a whole branch, especially when one considers the important position held by English in many degree examinations at British Universities.

Though English has been inadequately employed in these examinations, its treatment is nothing compared to that meted out to History, which is still only used as a preliminary test.

But such a comprehensive subject as history, European and Constitutional, is surely deserving of better recognition; and one would imagine that here, indeed, was scope for examiners to introduce a further branch. Apparently, however, the Council thinks otherwise, and, unhappily, history has thus not been accorded even the degree of recognition given to English. Therefore one may maintain that the defects of the examinations which have previously been pointed out still remain. For instance, presuming a teacher has only an elementary knowledge of science, mathematics, and classics, it is impossible for him, without a considerable amount of private study, for which he might be unable to find time, to obtain a higher diploma, even though he may be very fairly equipped in modern languages, English, and history.

Should, however, English and history be given the place in these examinations which from their importance they deserve, then hundreds of teachers throughout the country would be able to avail themselves of the advantages of the higher diplomas of the College. Presumably the objects for which the College of Preceptors holds these examinations are (1) to promote general efficiency; (2) to enable teachers who have not University degrees to obtain official recognition; (3) to encourage specialization. If the College is to carry out this programme, it ought to introduce a *maximum* number of optional subjects, so as to enable a *maximum* number of candidates to enter for the examinations.

One owes a word of gratitude to the College Council for the alterations already made; but, since gratitude is a lively sense of favours to come, our thanks are given in the hopes that further amendments will be introduced, and the examinations will thereby become of still greater utility to teachers.

MR. HERBERT SPENCER.

Mr. Herbert Spencer died at Brighton on December 8 at the age of eighty-three. The son of a Derby schoolmaster, he became an assistant teacher, turned to railway engineering at seventeen, and then passed into journalism, being sub-editor of the *Economist* 1848–53. For the past half century his history has been the well known history of his books. His treatise on "Education" (which was brilliantly discussed by Prof. Sadler at the School of Economics on December 23), though containing not a few important points of very disputable character, has been widely influential, and the sixpenny edition recently issued by the Rationalist Press Association is reported in a "third impression (completing 60,000 copies)."

Mr. Leonard Courtney's Eulogy.

Mr. Leonard Courtney, M.P., delivered a brief address at Golder's Green Crematorium just before the remains were cremated (December 12). He said:

The first thought of every one musing over the life of Spencer must be that of admiration for the vastness of the work he planned for himself, and of gratitude, and even joy, that he lived to see his self-ordained task completed. A delicacy of constitution, of which, having regard to his long years, Spencer himself was perhaps too sensible, threatened to interfere with, if not to arrest altogether, the progress of his work. The support he received was inadequate to meet the charges of his undertaking, and his means were being consumed at a rate which would soon exhaust them. This second hindrance was more easily set aside than the first. A circular intimating that the work must be suspended quickly brought a sufficiency of help. Indifferent health proved a more lasting difficulty; he was reduced to working very few hours a day, and sometimes to abstaining altogether from work for considerable intervals. The wonder is that, with the moderate allotment that was possible, so much work was done.

Thirty-six years did indeed pass from the first announcement of the undertaking before the final volume was issued. But what a range of inquiry, what an accumulation of illustrations, what a width of generalization do the volumes of the series not cover! All history, all science, all the varying forms of thought and belief, all the institutions of all the stages of man's progress were brought together, and out of the innumerable multitude of data emerged one coherent, luminous, and vitalizing conception of the evolution of the world. It is this harmony issuing out of many apparent discords, the oneness of movement flowing through and absorbing endless eddies and counterstreams and back currents, that constitutes Spencer's greatest glory, and that caused the multiplying army of readers of Spencer's successive volumes to feel the joy of discovering a great and ennobling vision of progress hitherto unrealized. If in later years some sense of the limitation of the inquiry has supervened, if some feeling has arisen of the insufficiency of the explanations offered of some steps in the proof, some apprehension of gaps uncovered in the synthesis, there still remains throughout all the varied populations of the civilized world the abiding undiminished conviction of a great gain realized, of a new plane of thought surmounted and mastered, new footholds of speculation secured which will never be lost in the education of man and the development of society. Admiration of the range of his inquiry, of the vigour of his analysis, of the scope and comprehension of his great theory must be our first impression in reviewing Spencer's work.

Yet must it never be forgotten that his one overmastering and dominant purpose was practical, social, human. Let it be noted that when it seemed too probable that his life would not endure to complete his design in all its parts he broke off the sociological analyses to reach forward to the right determination of the bases of individual and political ethics. To lay the foundation of these on bed-rocks of truth had always been his ultimate purpose. It was indicated in the first sketch of his proposed labours, and when preparatory clearances threatened to overwhelm him he left these works to achieve the essential purpose of his plan. The leading principle of his previous inquiries gave him the clue to the solution of this final problem. The self-adjustment of forces which he had found explaining all cosmic movements had a parallel in the self-adjustment of the forces through the working of which has been developed the society of men. In Spencer's vision it seemed inevitable that this should lead him to the highest exaltation of the worth of individual freedom and to contest with all his energy the interference of the rules of the many with the growth of the one. We may be permitted to cling to the faith that this conception presents a true aspect of ultimate evolution; and yet it must be admitted that not many of us could accompany Spencer in all the thoroughness of the immediate application of his principles to society as it is. If we know but imperfectly what we are and know not yet what we shall be, we may still believe in the ultimate realization of a perfect order without coercion, and of the service that shall be perfect freedom; and we may be bold to insist that meanwhile the presumption is against interference, the justification of which is a burden to be discharged. Spencer, indeed, in his late years, sadly took note of movements apparently in contradiction to the leading principles of his doctrines; and here I may recall a conversation, within a week of his death, between him and a friend who had once been wholly with him, but had latterly leaned to collectivist action. "We have been separated," said Spencer, "but, if we have been moving along different lines, I know we have both been moving to the same end." "Yes," she replied—it was a woman who showed that divergence of opinion could not detach her from offices of tenderness and love—"and it may be that in time some other method of attacking the great problem will be adopted, which will be neither wholly yours nor wholly ours." "Yes, it may," he said. Spencer, thus revealed, in the last week of his life, a mind open to receive new suggestions and to accept new proposals of change.

Standing here by these poor remains, so soon to be reduced to "two handfuls of white dust," we are irresistibly drawn on to accompanying Spencer in his last brave effort to scrutinize the implacable facts of life. The last chapter of his last book grapples with ultimate questions, and propounds his final judgment on the "Riddle of the Universe." No record can be more candid, no confession more striking, than that in which he is even appalled by the thought of space with its infinite extension and everlasting laws, enduring before evolution and creation declared things as they are. What is the place of man in this great vision? The brain so full and so powerful has ceased to act. There is no longer any manifestation of consciousness. Can consciousness survive after the organ on which it depended has ceased to be? Is the personality that dwelt in this poor frame to be admitted as in itself indestructible? Or must we acquiesce in its reabsorption in the infinite, the ever-abiding, the ineffable energy of which it was a passing spark? If indestructible in the future, must it not have been as incapable of coming into existence as it is incapable of ceasing to be? Our master knew not. He could not tell. The last enigma defies our question. The dimensions of the unknown may be reduced through successive ages, but, compared with our slender discoveries, estimated at the best, a vastness that remains must ever overawe us. Some fringes of the unknowable may yet prove to be capable of being known, but the great central secret lies beyond our apprehension. Yet two thoughts remain. If the night cometh in which no man can work, we may work while it is day. If we can work, it is somehow within our power to work for what is noble, for what is inspiring, for what is broadening, deepening, and strengthening the life of man. We may devote our lives to the service of supreme goodness. Looking back on the years of Spencer, we may say that he thus worked, he thus dedicated himself as truly and as bravely as any man enjoying the solace of a more definite creed. To this spirit, then, whose work survives, whose words

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yet speak, the wave of whose influence can yet pass from generation to generation, we may say, in all the fullness of interpretation which the phrase can bear, "Farewell."

In a letter to the *Times*, Mr. Courtney apologizes for not having mentioned in his address the measure of condolence passed by the Italian Chamber, which he had overlooked on account of a hurried journey.

A Tribute from India.

After Mr. Courtney had spoken, Mr. Shyamaji Krishnavarma said:

After the touching and eloquent oration we have just heard, I hope a few words from a native of India will not be regarded out of place. The name of Mr. Herbert Spencer is a household word among my educated countrymen; personally, I owe a deep debt of gratitude to the writings of that truly great and good man whose loss we all bemoan to-day. As a trifling token of my respect and esteem, I offer £1,000, with the object of perpetuating the memory of that great benefactor of mankind. I propose to write to the Chancellor of the ancient and renowned University of Oxford, offering the amount for establishing a lectureship, to be called the Spencer Lectureship, like the Romanes Lectureship at Oxford; but, if, perchance, my own University decline the offer, I trust the Honourable Auberon Herbert and the other trustees, the executors and friends of Mr. Spencer, will kindly help me in establishing the Spencer Lectureship in London. I thank you all for allowing me to express publicly my indebtedness to Mr. Spencer on this solemn and memorable occasion.

The urn containing the ashes was placed in a cavity in a granite sarcophagus in Highgate Cemetery.

Proposed Memorial.

Mr. H. Osman Newland, Rawdon, Rastell Avenue, Streatham Hill, S.W., writes:

The lamented death of Mr. Herbert Spencer affords Englishmen an opportunity to do for their greatest philosopher in death what was denied him in life—the gratification of his desire to see the study of sociology tangibly recognized in this country, as it has been in America, France, and Germany. I suggest two ways in which this may be done: (1) the endowment of a Chair of Sociology at one of our Universities as a memorial to the late Mr. Spencer; (2) the establishment of a Sociological Society, under royal patronage, for the further encouragement and investigation of the science to which the late philosopher devoted his life.

In connexion with this second proposal, I may add that I would myself convene a meeting should a sufficient number of supporters communicate with me.

COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A meeting of the Council was held at the College on December 12, Present: Mr. Butler, Vice-President, in the Chair; Rev. G. C. Bell, Rev. J. O. Bevan, Dr Breul, Mr. Charles, Mr. Eve, Mr. Hawe, Rev. Dr. Hiron, Mr. Holland, Mr. Millar Inglis, Mr. Pinches, Mr. Rule, Rev. J. Stewart, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the Christmas Certificate and Lower Forms Examinations had been held on December 8–11, and that the number of candidates was about 8,500. For the Christmas Examination of Teachers for Diplomas the number of entries was about 570.

Mr. W. E. Johnson, M.A., was appointed to deliver the Psychology Course of Lectures to Teachers in 1904.

Saturday, January 23, was fixed as the date of the next Ordinary General Meeting of the members of the College.

The report of the Examination Committee was adopted.

The draft report of the Council to the General Meeting was considered, and was referred to the President, Vice-Presidents, and Dean for final revision.

The following persons were elected members of the College:—

Mr. C. Pendlebury, M.A., 40 Glazbury Road, West Kensington, W.

Mr. F. E. Smith, Kingston, Ontario, Canada.

The following books had been presented to the Library since the last meeting of the Council:—

By C. J. Clay & Sons.—Kirkpatrick's Isla's Los Ladrones de Asturias (Spanish Translation of Gil Blas, chapters i.-xv.).

By W. B. Clive.—Watt and Hayes's Matriculation Selections from Latin Authors.

By Macmillan & Co.—Castle's Manual of Practical Mathematics; Hall and Stevens's School Geometry, Part IV.; Macmillan's Scott's Marmion, Cantos I. and VI.

By Methuen & Co.—Clough and Dunstan's Elementary Experimental Science.

By the Oxford University Press.—Jowett's Translation of the Four Socratic Dialogues of Plato; Macaulay's Selections from Gower's Confessio Amantis.

By Relfe Bros.—Carter's The Reigns of David and Solomon; Pilot's Mnemonics for Dates.

Calendars of the City of London College; University College, Nottingham; and St. Thomas's Hospital Medical School.

TECHNICAL INSTRUCTION FOR WOMEN.

The Report of the Committee appointed by the London County Council last April "to inquire into and report upon the requirements of women in respect of technical instruction and the facilities afforded them, with special reference to London," has just been issued. Little help has been got from Continental example, women's technical schools in France, Germany, Belgium, Italy, and Switzerland being day schools in which general education and technical training are carried on together. The Committee recapitulate the work carried on by the various day and evening classes, the results of the scholarship system, the work of the Battersea Polytechnic, and the trade classes. They set out three main difficulties in the way:

1. Women are loth to undergo the discipline and the fatigue of a thorough technical training because, unlike men, they do not consider bread-winning to be their settled work in life, and they approach industrial matters on the assumption that their wage earning is to be casual or only for a time. They desire, therefore, to be taught one particular process rather than to undergo technical training in its proper sense.

2. Women frequently work so late in the factory and workshop that they cannot attend evening classes, or, if able to attend, are unwilling to resume workshop practice, and prefer classes of a literary or recreative character. We think that the action of employers like Messrs. Debenham & Freebody and Messrs. Sélincourt & Sons might be more widely advertised with a view to inducing other employers to adopt a similar course. Messrs. Sélincourt & Sons have arranged to allow their apprentices to attend dressmaking classes on certain afternoons each week, and have given them one hour off work for this purpose, a second hour being taken from the girls' free time; they have paid half the fees of their apprentices, provided material for their work, and have awarded prizes for the best work done.

3. Experience shows that so soon as girls have left the elementary school they get beyond the reach of the influences which might have induced them to continue their education. This applies much more to girls than to boys. Girls are required at home, or they are put to work which needs no skill, and their occupation gives them no impulse to return to classes.

To recommend action similar to that of the two firms mentioned, the Committee draft a circular letter suggesting that it should be sent to the principal employers of women and girls in London. In conclusion, the Report makes 26 proposals, of which the chief are the following:—

That managers of girls' clubs and societies, as well as the parents of pupils, be invited to visit the classes and the exhibitions of work.

That teachers, whether in trade or domestic economy classes, be reminded of the importance of inducing their pupils to go through a thorough course of instruction in the subject taught, instead of confining their attention only to particular pieces of work needed for immediate use.

That industrial design be more closely associated with workshop practice and conditions.

That pupils at the end of their course receive certificates of attendance or written reports of work done.

That in technical day schools, or wherever a seasonal trade, such as artificial flower-making, is taught, care be taken to associate the trade instruction with instruction in other branches of industry which would provide work in slack seasons.

That classes be established for the training of women in hygiene and sanitation with a view to their taking up the occupation of sanitary, workshop, or public health inspectors, or of rent collectors.

That in domestic economy schools more thorough instruction be given in the care and management of infants and young children.

That classes be formed for teaching the marking and repairing of household linen, and the mending of lace and fine materials.

That day cookery classes be connected, when possible, with the provision of meals at restaurants.

That day or afternoon classes for the training of daily servants or charwomen be conducted on the lines of those held by the Women's Industrial Council.

That, wherever possible, women be employed as teachers of trade classes for women.

That the attention of governing bodies of technical institutes be drawn to the desirability of opening book-binding classes for women, emphasis being laid upon the artistic part of the work.

That dressmaking classes be brought into closer touch with the art classes.

That bodies having the control of apprenticeship funds be urged to make the apprenticeship of girls to any firm conditional on the provision of such facilities for technical instruction.

That, above all, employers be urged to make arrangements whereby their work-girls may attend technical classes during working hours.

That technical day schools for girls, with a course planned to cover three years, be opened as opportunity offers, an experiment being made in the London County Council Sydenham Technical Institute as soon as it is available.

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CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—Ed. *E.T.*]

"ESPERANTO."

To the Editor of "The Educational Times."

Sir,—Referring to Miss Lawrence's letter in your issue of December 1, may I be allowed to say that she is hardly correct in supposing that the successor of Volapük is still so little known among the teaching world as to require an explanation and initiation? It is true, however, that—being a successor of that defunct impossibility, Volapük—mankind in general is perhaps less enthusiastic about Esperanto than would be the case if Volapük had not proved so singular a failure. But noticing, as we necessarily must, the rapid spread of the "Shorthand Language" in most countries of Europe, we cannot help asking why it is that we in England only quite of late have begun to take an active interest in Esperanto. Is it because we believe that English, and nothing but English, will be the universal language? An honest admirer of our language can hardly wish it more universally murdered than this is already being done—at home by the ubiquitous German waiter, in the Far East by the pidgin-English-speaking Chinese. Or do we not want a universal language at all? Certainly we do: and perhaps even more than any other European nation. Nor is it to be ascribed to our linguistic hesitancy. But what strikes me as the one reason is that the Britisher prefers others to experiment, disinclined as he is to rush enthusiastically into some new scheme without being perfectly sure of its ultimate value and success. John Bull, therefore, has never been asleep, but has always been ke ping open at least one eye to the birth and subsequent growth of Esperanto. He will not be able to lead the movement, but he will follow; for follow he must.—I am, Sir, &c.,

M.A. Oxon.

Mr. A. L. Schafer (Esperantist 7778), 8 Gloucester Crescent, Regent's Park, N.W., a teacher of languages, wishes to give his experience of Esperanto, adding that he "will gladly help any one to acquire the language (gratis, of course), or give information about it." He writes: "With Esperanto I found that it only took me a few weeks to learn what in other languages would have taken at least eighteen months or two years of careful study. . . . Added to its being easily mastered, it is also intensely interesting, very euphonic (sounding somewhat like Italian), and most expressive. In Esperanto every shade of human thought and feeling can be expressed as tersely as in any derived language, and it is adaptable to every range of subject, from science, philosophy, and poetry to commerce and topics of everyday life.

"I myself have corresponded in Esperanto with persons in Eastern and Southern Europe (strangers to myself, of course), with perfect ease and profit; and this possibility of corresponding with unknown individuals also develops breadth of mind and a certain feeling of interest and good-fellowship and kindness towards others."

Mr. J. C. O'Connor, B.A., Esperanto House, St. Stephen's Square, Bayswater, W., writes (December 1): "On the part of Esperantists all the world over, I thank you for the insertion of Miss Lawrence's letter. That 'Esperanto' is all, and more than all, that Miss Lawrence claims for it is evidenced by the testimony of such men as Count Leo Tolstoy and the late Max Müller. The former, speaking of the language, says: 'Esperanto is so easy to understand that when I received some time ago a grammar of the language I was able in two short hours, if not to write, at any rate to read, the language fluently.' And Max Müller, a short time before his death, declared: 'I certainly place Esperanto far above all its rivals.'

"Though a twelvemonth has not passed since I introduced 'Esperanto' into London its spread has exceeded my most sanguine expectations. Upwards of twenty groups for the teaching of the language are established throughout England. Three or four classes are at present in full swing in London; these are taught by those who were my first pupils in the language. In the suburbs also many classes are in existence. . . .

"I should be very glad indeed to give a blackboard demonstration of the language to my colleagues in the teaching profession in order to show them that the language is all that its advocates claim for it. In the meantime, as it is my intention to form a class for teachers (ladies and gentlemen) I should be very glad to hear from any of them who would like to take up the subject, when I shall at once make arrangements for same. Like all the other classes in Esperanto, this would be free of all charge."

INFORMAL EDUCATIONAL DISCUSSION.

A First Experiment.

To the Editor of "The Educational Times."

Sir.—It is almost certain that considerable changes in secondary education are imminent, and the comparative success or failure of such changes seems likely to depend largely on the answer which will be given to a very complex question: Are those who have special experience or knowledge of the subject prepared to submit to the new administrative Authorities wise, weighty, and well considered advice? If they are, there is great hope of real progress. If they are not, then the Authorities, lacking such necessary guidance, must fall into error and wander aimlessly along wrong paths.

But, in order to give good advice, and, above all, in order that such advice may be harmonious and systematic, there must be much preliminary discussion among experienced men of all sorts. Doubtless such discussions are being already carried on with much advantage, both in the educational press and in the meetings of many associations. But this is not enough. As every business man knows, whenever questions of difficulty and importance, involving the reconcilement of many conflicting views, have to be settled, the best method of arriving at a wise settlement is for those who are most concerned to meet and "talk matters over" in a perfectly free and friendly manner. Formal meetings may be required later; but such informal preliminary meetings are usually indispensable to success.

It is on such general grounds—which I only refer to most briefly, because they are patent to every one—that the Association of Assistant Masters has resolved to venture on a very modest, very simple, but, it is hoped, very useful, experiment. It is proposed to hold meetings of a social and strictly informal character in the evening of the third Thursday in every month, beginning in January, for the consideration of questions of general educational interest. For this purpose a room has been secured in London, and the Association will endeavour, from time to time, to secure the presence and help of those who have a special claim to speak with weight about education; but it is desired also to attract others who may be interested in the subject, and it is for this object that I venture, Sir, to ask you to give publicity to the proposed scheme by publishing this letter. Any further information will be readily supplied on application to the Secretary of the Association, 27 Great James Street, W.C.—I am, Sir, &c.,

T. E. Page.

Charterhouse, Godalming, *December* 21, 1903.

THE TEACHERS' REGISTER.

To the Editor of "The Educational Times."

Sir,—Would you permit me to call the attention of teachers in secondary schools to the fact that efforts are being made, and will continue to be made, in Parliament and elsewhere to bring about the suppression of Column B of the Register, so that there shall be absolutely but one list of all classes of teachers, excepting, of course, those to be placed in supplementary registers, as art teachers and the like?

I need not enlarge upon the seriousness of this prospect. To the elements of unfairness, delay, and uncertainty already existing, and affecting secondary teachers, other elements would be introduced tending to render registration more unpopular than it is at present, and also interfering with the work of organization and consolidation looked forward to and striven for during many years by that devoted class of public servants engaged in the all-important work of secondary education.

One illustration may be given. To further the end of reform and co-ordination it is essential that such teachers should be effectively represented on all Educational Authorities. Probably, at no distant time, the Register would come to be regarded as furnishing a constituency qualified to vote, district by district, for such representatives, or, at all events, to have a voice in their selection. If there be but one list, the elementary teachers would always be in a large numerical majority—a majority, it must be borne in mind, already effectively organized on trade union principles, under the banner of the N.U.T., as opposed to

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secondary teachers, who, from the nature of the case and from the varying conditions of their work, cannot be said to be organized into one body at all.

Of course, various expedients would be suggested for securing what might be considered to provide a fair representation of different classes of teachers; but, from what one sees and hears, I should distrust the justice or the mercy of such expedients, or their permanent operation, as between two bodies of teachers with such different aims and traditions and with such different methods of organization. Secondary teachers may depend upon it that the most efficient safeguard will be the existence and retention of Column B.—I am, Sir, &c., J. O. Bevan.

Chillenden Rectory, Dover, *December* 16, 1903.

THE TEACHING OF GEOGRAPHY.

Cheap Ordnance Survey Maps for the Schools.

To the Editor of "The Educational Times."

Sir,—May I through your columns call the attention of teachers to an important concession which has recently been made to schools by the Board of Agriculture? Most teachers know how necessary Ordnance Survey maps are for sound class teaching in local geography; but the price has hitherto been prohibitive. In response to memorials from various sources the Board of Agriculture has now issued instructions that special editions of the one-inch maps be supplied to Education Authorities at the following prices:—200 copies, £1. 5s.; 500 copies, £2; 1,000 copies, £3; 5,000 copies, £12. For larger numbers the estimated price would be £2 per 1,000 copies. The only stipulation made is that on no account are the maps to be sold. It is universally agreed that all sound geographical teaching must begin in a study of the home region, and it is therefore to be hoped that most teachers will avail themselves of the facilities so generously granted, either individually or by making application through the Local Education Authority. Further information may be obtained through the Geographical Association.—I am, Sir, &c., A. J. Herbertson,

Hon. Secretary Geographical Association.

School of Geography, Oxford.

ASSOCIATIONS OF SCHOOL MANAGERS AND TEACHERS.

To the Editor of "The Educational Times."

Sir,—I shall be very grateful if any of your readers can send me information with regard to any joint association of managers and teachers of *all classes* of schools, with, if possible, the addresses of the secretaries and copies of the rules of such associations.—I am, Sir, &c.,

(Miss) K. F. H. Garnons Williams.

Aber Camlais, Brecon, South Wales.

December 14, 1903.

We are happy to say that Mr. Charles Pendlebury is not "the late," as we unfortunately stated in noticing his admirable "Arithmetic for the Standards" in our December issue (page 515). We are assured that the two words "are premature," or, as Mark Twain said under like circumstances, the news is "much exaggerated"; and, indeed, that he is "very much alive." Long may it be so! We are glad to note that he is one of the most recent accessions to the membership of the College of Preceptors.

REVIEWS.

A Library of Modern History.

The Cambridge Modern History. Vols. I. and VII. (16s. net each. Cambridge University Press.)

This great and distinctive work—a narrative of "the general history of Europe and of her colonies since the fifteenth century"—was planned by the late Lord Acton, Regius Professor of Modern History in the University of Cambridge. It has been written by a large number of experts in various departments of historical inquiry, co-operating under the general scheme, and it is produced under the editorship of three other Cambridge men of distinction in historical study—Dr. A. W. Ward, Litt.D., Dr. G. W. Prothero, Litt.D., and Mr. Stanley Leathes, M.A. Each volume—the complete work will be in twelve volumes—extends beyond 800 royal octavo pages. The printing is worthy of the traditions of the Cambridge University Press; the paper is light, so as to render the large volumes easy to handle; and the binding (in buckram) is most conveniently flexible as well as strong. Apart from the uses of the general reader, who will certainly not find elsewhere any more accurate, instructive, or agreeable presentation of the course of modern history, the work is pre-eminently suitable for the shelves of the school library, where it is sure to attract the inquiring student to clothe and to vitalize the bones of his ordinary text-book, and not unfrequently to discover and to remedy traditional malformations.

The aim of the work is "to record, in the way most useful to the greatest number of readers, the fullness of knowledge which the nineteenth century has bequeathed to its successor." This "way" is not the way of the universal modern histories hitherto produced, and well produced, in Germany and in France. It does not lead to an agglomeration of separate histories of the different countries: "it moves in a succession to which the nations are subsidiary"—fully depicted, but disposed on a principle of much wider scope. Their stories are told "not for their own sakes, but in reference and subordination to a higher process, and according to the time and the degree in which they influence the common fortunes of mankind." Accordingly, "some historical fact of signal importance" has been chosen as the central idea to be expounded and illustrated in each of the volumes, and round this are grouped the pertinent individual developments in the several countries, "not accidentally, but of reasoned purpose." The whole of the history of modern times, so far as Europe and its outgrowths are concerned, is thus recast in a fresh mould, so as to display the world-significance of the notable movements and so as to exhibit in their real historical relations the great ideas, achievements, and figures of the period. The chronological and geographical details are made subservient to the larger and more instructive conception. The immense importance of such a standpoint of treatment is very obvious on the simple statement, and the reports of the survey contained in these volumes mark the highest reach of general historical presentment in our time. The results cannot but work an incalculable influence on historical studies in the immediate future.

From the plan of the work it becomes at once evident that the collaboration of many experts was absolutely necessary for its adequate execution. The more liberal access to archives, which has been largely gained through the progress of historical studies, as well as through the widening of the intellectual outlook, has opened out to students vast masses of fresh materials; and the materials already accessible have had to be investigated at first hand. The editors make a sufficiently severe statement on this point:

> In view of changes and of gains such as these [new materials], it has become impossible for the historical writer of the present age to trust without reserve even to the most respected secondary authorities. The honest student finds himself continually deserted, retarded, misled by the classics of historical literature, and has to hew his own way through multitudinous transactions, periodicals, and official publications in order to reach the truth.

Yet, severe as this statement is, no one that has worked at an historical period or episode at first hand can fail to recognize its painful truth. From time to time we have mildly hinted as much in notices of current history books for school use, though we have felt it unfair to press hard on particular writers in view of the conditions of historical study inevitably prevalent. The warning of the editors of the present work, however, must be laid to heart; and, judging from the enterprise of competitive school historians, we have no doubt that they will. Meantime, the division of the present work among a large and varied body of scholars who have devoted special study to special periods gives it a value that it could not possibly have otherwise commanded. One has merely to look at the list of authorities—a severely select list, too—in order to be duly impressed with the hopelessness of any single-handed attempt to deal with the whole compass of the materials.

The first volume is devoted to "The Renaissance." Its plain purpose, of course, is to describe and discuss the Renaissance as a movement of European history; but it necessarily takes a wider scope—"it is also designed as an introductory volume whose business it is, as it were, to bring upon the stage the nations, forces, and interests which will bear the chief parts in the action." Each chapter, accordingly, "includes so much of antecedent, especially of institutional, history as seemed necessary to the clear understanding of the conditions with which it is concerned"—British history, however, being substantially

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assumed as already known to English readers. A brief, but comprehensive and pointed, "Introductory Note," by the late Bishop Creighton, at once places the reader at the right point of view. "The Age of Discovery" and "The New World" are depicted by Mr. E. J. Payne, whose independent publications have fully established his right to speak with authority. Prof. Bury narrates "The Ottoman Conquest." Mr. Stanley Leathes has had the advantage of Dr. Hodgkin's experienced guidance in the treatment of "Italy and her Invaders," and of Dean Kitchin's in his later chapter on "France." "Florence" is handled by Mr. E. Armstrong and Mr. L. Arthur Burd—the one grouping his narrative around Savonarola and the other around Macchiavelli. "Rome and the Temporal Power" has fallen to Dr. Richard Garnett; "Venice" to Dr. Horatio Brown, who has made the subject his own; "Germany and the Empire" to Prof. Tout; "Hungary and the Slavonic Kingdoms" to Dr. Emil Reich; "The Catholic Kings" to Mr. H. Butler Clarke. Dr. Ward, one of the editors, deals very ably with "The Netherlands," a most interesting section; Dr. James Gairdner is quite at home among "The Early Tudors"; Dr. Cunningham traces lucidly the history of "Economic Change"; Sir Richard Jebb writes on "The Classical Renaissance"—one of the most learned and interesting of the chapters; Dr. M. R. James describes "The Christian Renaissance," and Dr. William Barry "Catholic Europe"; and, finally, Dr. Henry Charles Lea, whose special studies in the period are well known, depicts "The Eve of the Reformation." The team is certainly a very strong one. The weight of learning, however, does not depress the style. The whole volume is eminently readable. and the unity of tone is remarkable.

The seventh volume—the second in order of publication—is concerned with "The United States." In treating a single nation through a continuous history of some three hundred years, it seems to make a departure from the original general plan, which was "that the history of each people should be taken up at the point at which it was drawn into the main stream of human progress as represented by the European nations." The justification offered by the editors, which tends to show that the departure is more apparent than real, need not be examined too closely: reasons of convenience are amply sufficient. Mr. J. A. Doyle, who has already treated the early history at length in esteemed volumes, reviews "The First Century of English Colonization (1607–1700)" and the progress of "The English Colonies (1700–1763)"; and, after Miss Mary Bateson has narrated the successive periods of colonization by "The French in America (1608–1744)," and Mr. A. G. Bradley has described "The Conquest of Canada (1744–1761)," Mr. Doyle discusses "The Quarrel with Great Britain (1761–1776)," and thereafter outlines "The War of Independence (1776–1783)." The legal and political contentions of the colonists, issuing in "The War of Independence," are luminously handled by Prof. Melville M. Bigelow, of Boston University Law School, although the doctrine of "legal" right is still open to closer examination in the purely theoretical aspect. Prof. Bigelow also expounds at considerable length the making and the contents of "The Constitution," justly recognizing Alexander Hamilton as "the master spirit of the Convention which framed the Constitution of the United States and of all that led to it"—"youngest and greatest man of them all." Prof. J. B. McMaster, of the University of Pennsylvania, contributes three important sections—"The Struggle for Commercial Independence (1783-1812)," "The Growth of the Nation (1815–1828)," and "Commerce, Extension, and Slavery (1828–1850)." "The War of 1812–1815" is briefly related by Mr. H. W. Wilson, who also outlines, in a later chapter, the "Naval Operations of the Civil War (1861–1865)." President Woodrow Wilson, of Princeton, deals capably with the ticklish subject of "State Rights (1850–1860)." The story of "The Civil War (1861–1865)" is narrated in three vivid chapters by the late Mr. John G. Nicolay, who also treats generally of "The North during the War," the corresponding general chapter on "The South during the War" being furnished by Prof. J. C. Schwab, of Yale. The era of "Political Reconstruction (1865–1885)" is judiciously presented by Assistant Prof. Theodore Clarke Smith, of Ohio State University. Prof. J. B. Moore, of Columbia, treats of "The United States as a World-Power (1885–1902)" very interestingly, if rather disproportionately to the scope of the volume. The "Economic Development of the United States" is traced by Prof. H. C. Emery, of Yale, in a well balanced chapter that offers lessons for our current fiscal controversy; and Prof. Barrett Wendell, of Harvard, supplies the final chapter on "The American Intellect."

It is pleasant to note the very large share that has been taken by American scholars in the writing of the American volume. The appended bibliographies are extensive and most useful. If the remaining volumes show the same thoroughness as the present two—and there is every reason to anticipate that they will do so—the whole work will furnish a library of modern history eminently creditable to English scholarship, and especially honourable to Cambridge.

British Economics—History and Practice.

(1) *The Growth of English Industry and Commerce in Modern Times.* In two Volumes. Part I., *The Mercantile System;* Part II., *Laissez Faire.* By W. Cunningham, D.D., Fellow of the British Academy, Fellow and Lecturer of Trinity College, and Vicar of Great St. Mary's, Cambridge, &c. (25s. net. Cambridge University Press.)

(2) *British Industries under Free Trade.* Edited by Harold Cox. (6s. Fisher Unwin.)

(1) These two ample and handsome volumes constitute the modern section of Dr. Cunningham's comprehensive survey of the growth and development of English industry and commerce. It is fully twenty years since the work appeared in its original form, and the present is the third edition. The author's experience as a college lecturer since the publication of the second edition eleven years ago has, he acknowledges, brought him "to see many of the matters dealt with in truer proportion." Thus:

> I have given more attention to the economic affinities of different political personages and parties; I have noted more definitely the disastrous effects of the Civil War on the social and industrial organization of the realm; and I have been able to write more justly of the Restoration period, which so closely resembles our own.

These, however, are but large general indications; the fact is that the work has been entirely recast: "hardly a paragraph has been incorporated in this edition without alteration, and the greater part of it has been more than once rewritten." In the notes also, which occupy considerable space, there have been inserted "additional illustrations and occasional allusions to analogous changes in other countries," as well as similarly helpful references. The more instructive literature of the subject is marshalled in a bibliographical index under several heads, the contemporary literature being conveniently arranged in chronological order. There are also several appendixes containing important illustrative documents or explanatory remarks.

With all these changes in detail the general character of the work remains essentially as it stood. Dr. Cunningham, while describing and seeking to account for the actual course of the material progress of the country, exhibits the intimate interconnexion of the political and the economic history of the nation from the beginning of the Elizabethan period down to 1850. The treatment is based on the widest investigation, including not only original documents and English writings but also the criticism of foreign students, and it is conducted with much intellectual energy and in a broad spirit. The whole narrative and discussion is remarkably fluent and interesting. The work, if not already a classic, is in a very fair way to become a classic; in the meantime, at any rate, it is the most outstanding review of the subject.

The writer of a history must draw the time-line somewhere; but, after all, it is now a far cry from 1850. True, the handling of the economic events of the past half-century involves unusual difficulties: "since economic causes do not lie on the surface, there is all the more danger that men may fail to appreciate the really important forces that are at work in their generation." Still, the nation is continuously working out its destiny under the influence of economic forces; buying and selling, exports and imports, go on day after day; the Chancellor of the Exchequer takes stock once a year; and surely half a century is a sufficiently large space to indicate to the critical historian the tendency and the behaviour of the economic currents. Other writers, indeed, have not been restrained by the difficulties that deter Dr. Cunningham; politicians have again and again raised the crucial question of principle supposed to be finally settled in the later forties; and now public affairs are convulsed by a fresh attempt to revolutionize the economic system, and Dr. Cunningham furnishes no analysis of the past fifty years' experience for our practical guidance on an issue that, we are told, involves the very existence of the Empire. Yet we have no doubt that Dr. Cunningham has exercised a wise discretion; he will see his way very much more clearly within the next decade. His "Postscript" shows plainly enough that it is more judicious for him to adhere to the *rôle* of historian pure and simple than to attempt to evolve

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the future from the past. Some of the points he makes are obvious enough; others seem open to adverse criticism, as based on incomplete grasp of the essential factors; the more immediately important are all but paralyzed by caution. We read on the margin, however, that the expectations of Cobden and his friends as to the action of other nations "have not been fulfilled," that "it may be wise to abandon commercial *laissez faire* for the sake of securing our food supply," and that "temporary retaliation might prove to be a step to universal free intercourse" (pages 869–70). The expression, though carefully tentative and in the "potential" mood, is sufficiently suggestive. We cannot discuss the matter here, because an academic argument is so apt to be taken as a political and party argument when the question is a burning one; but any student that will compare Dr. Cunningham's representation of the attitude of Cobden and his friends with the well known facts can decide for himself whether or not that statement is historically or critically satisfactory. However, the weaknesses of the postscript must not be allowed to diminish one's admiration of this great work.

(2) The Secretary of the Cobden Club brings together, in a compact and handy volume, a score of "Essays by Experts" upon as many of the principal branches of British trade: cotton, wool, linen, silk, banking, shipping (liners and tramps), cutlery, tinplates, confectionery and preserves, groceries, paper, alkali, soap, boots and shoes (with note on leather), flour milling, iron and steel, machinery and engineering, and coal. The essays are full of facts, and the conclusions drawn are based on practical experience. The writers are unanimously and decisively in favour of free trade. Mr. Cox furnishes a piquant preface enforcing the same view. The volume is most opportune and valuable for serious students of the problem, and it constitutes a challenge that opponents cannot afford to disregard.

Classical Causeries.

Lectures on Classical Subjects. By W. R. Hardie, M.A., Professor of Humanity in the University of Edinburgh. (7s. Macmillan.)

There are ten lectures. The first half of them are concerned with the spirit and ideas of the classical poets—their feeling for Nature, their beliefs as to a life after death, their treatment of the supernatural, their conception of the Age of Gold (with somewhat special reference to Virgil's fourth Eclogue), and the vein of romance in Greek and Latin literature. The two next deal with the language and the metrical form of poetry. The three last are occupied with literary criticism at Rome, the revival and progress of classical studies in Europe, and the aims and methods of classical study—useful and suggestive sketches, introductory to the various subjects and disclaiming completeness. Prof. Hardie does not address the professional scholar; he is content "if some of these lectures be thought to set a useful example of a simple and unambitious line of inquiry, which consists rather in collecting and arranging what the ancients have to say on some important topic than in theorizing about it or criticizing the theories of other people." The chapters are simple, scholarly, and very interesting talks, marked by careful observation, sympathetic intelligence, delicate discrimination, and luminous illustration. Some of them appear to have been delivered as introductory class lectures, others as addresses to local societies of a more or less popular membership; yet the scholar, too, will read them with restful pleasure. As to the aims and methods of classical study, it may seem somewhat paradoxical to say that "there has been but little real discussion of this subject in Great Britain." That depends on the point of view. Prof. Hardie's analysis and illustrations, in any case, will be found instructive. If any one affirms that "all we need to do is to read some clear and eloquent account of the life and thought of the ancients, or some authoritative critical treatise on the ancient authors, in order to get all the real advantage that can be got from a classical training"—which probably not even Prof. Armstrong or Prof. Perry will affirm—Prof. Hardie will reply that this is "quite illusory."

Generalizations about the life and thought of a past age are mere empty phrases, unless we possess some direct acquaintance with that life and thought. Critical description of an author's merits and defects is one of the most useless forms of human knowledge, unless we can read the author ourselves, and feel that it is true. The key to the whole lies in the laborious mastery of details—in the first instance, in minutely accurate study of grammar and idiom.

Yes; for the mastery of the scholar. But the argument scarcely touches the fringe of the real question—the question of the schools, the question of making the most of classics for the student whose chief interests lie elsewhere. Prof. Hardie, moreover, does not seem to have worked out his argument in wider applications; else he might have discovered that it would lead him to some awkward results. He is but very gently combative, however, and his interest is with the scholarly student. Placid, leisurely, refined, agreeable essays—the natural product of a pedagogic region where the struggle of life is overpast and forgotten, and where time has ceased to be of the essence of the problem.

How to teach Arithmetic.

The Teaching of Arithmetic. By W. P. Turnbull, M.A. (2 vols. 4s. net each. Newmann.)

To the growing sense of the importance of intelligent teaching in schools of all grades we owe such books as the present treatise, which comprises a series of very instructive lessons for those intending to teach arithmetic. Many of the methods advocated are derived from foreign sources, and the practice on which the author lays perhaps most stress, doubtless because of its wide application, is that of imparting to a pupil a knowledge of first principles by means of ocular demonstration, before employing those principles as the basis of mechanical rules. A child throughout his training in both the preliminary and the more advanced processes of elementary arithmetic is to gain his first knowledge of the essence of each portion through oral, practical, and mental exercise rather than through written work, which finds its true place in the course of instruction when practice in methods already well understood is the main object to be attained. Lengths with *appreciable breadth* are recommended as amongst the best machinery for the practical demonstration of fundamental truths about numbers, and the author points out that an excellent apparatus for the purpose exists in Tillich's "brick-box." There is, the writer asserts, an advantage in always adopting similar types of illustration in connexion with a special point, inasmuch as variety is wont to distract the mind and to make it less ready in forming from the concrete example an abstract conception. Again, for imparting ideas about number there is (to quote the author's views) superiority in the "brick-box" over devices of which the ball-frame may be taken as an example, because the former creates imperceptibly in the minds of pupils the sense that number forms a continuous series and does not consist essentially of separate integers; hence no false impression is given of the whole, only to be shown later to be inaccurate and then destroyed with difficulty, if indeed at all. The latter argument is of general significance and not applicable merely to Mr. Turnbull's subject; for it cannot be urged too often or too strongly that in every branch of study the aim should be to teach in such a manner that what is learnt may be capable of receiving hereafter additions and extension, whilst no portion of it should be liable to be assailed as unsound. The author deprecates, and rightly, all looseness of language and slovenliness of proof. A valuable idea, when the size of classes admits of its being carried out, is embodied in the suggestion that individual pupils should be accustomed to work on the blackboard before the class; and the excellence of the practice will be increased if it be understood that the remainder of the class is in a measure held responsible for the correction of errors made. It is of course unlikely that Mr. Turnbull's particular methods will all meet with equal and universal approval, but the readers for whom his book has been specially prepared are strongly recommended to study it in detail, and they will recognize the interest and utility of the new work as a text-book for their use.

GENERAL NOTICES.

CLASSICS.

Selections from Tibullus and others. Edited by J. P. Postgate, LL.D., Fellow and Senior Classical Lecturer of Trinity College, Cambridge, and Professor of Comparative Philology in University College, London. (5s. Macmillan. "Classical Series.")

A little more than a quarter of the space is occupied by the text (63 pages), the rest being given to notes and appendixes (pages 65–228). Two-thirds of the text consists of a dozen judiciously representative excerpts from Tibullus; the remaining third is disposed under the German title of "The Messalla Collection," the genesis of which is acutely discussed in the introduction. Prof. Postgate has tried to meet the wants of two classes of readers. "It has been my aim in the explanatory notes," he says, "to give, as far as possible, brief and simple comments upon the text that I have adopted, re-

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serving the points that required longer or more advanced discussions to be dealt with in appendices." He has reconciled the diverse objects with much address. The whole work has been thoroughly considered, and the more difficult questions have evidently been turned over in the author's mind for many years. It is an exemplary specimen of classical editing. There are 15 illustrations (four full-page) and a map of the two Aquitanias. The print and the get-up are of the usual excellence of the "Classical Series."

Pro Patria: A Latin Story for Beginners. By E. A. Sonnenschein, D.Litt. Oxon., Professor in the University of Birmingham. (2s. 6d. Swan Sonnenschein.)

A sequel to "Ora Maritima," after the same plan—the Latin text to be "classical in form but modern in setting." So the scene is laid in a country house on the Kentish coast, and afterwards at Winchester, and the time of the action is September, 1899, to June, 1900. The first part is occupied with a study of Roman Britain in connexion with a visit to Richborough Castle; the second with the Boer War. "Party politics are, of course, kept out of view"; but the spirit of them is not so easily repressed, although one may not feel this so distinctively in the latitude of Birmingham as elsewhere. We are all "pro patria," but the waving of the "vexillum Britannicum" (page 56) might have been performed with more general enthusiasm in connexion with a less violently disputed series of events, of which the end is not yet. The general idea of the work is excellent, and the preparations, exercises, and vocabulary are well conceived and worked out.

A First Latin-English Dictionary. Compiled by A. C. Ainger, M.A. (2s. 6d. Murray.)

A very handy volume, just over two hundred pages, including a considerable selection of proper names as well as of the common vocables. Mr. Ainger hopes that it "may enable the learner to dispense with vocabularies": it may, though the hope is probably destined to be but a pious aspiration. "The book will supply nearly all the words found in Virgil and Horace, and in the easier Latin prose authors." It is executed with great care, and it is printed with admirable clearness. It will be a special boon to pupils that do not intend to carry their Latin studies beyond the simplest authors.

MATHEMATICS.

Mathematical Crystallography. By Harold Hilton, M.A. (14s. net. Clarendon Press.)

The purpose of the work is excellent, and those to whom the subject is of interest or importance will greatly appreciate the help which the author has set himself the task of giving them. From foreign treatises on crystallography he has collected and adapted important theorems and results connected with the mathematical theory of the science which have not been demonstrated in recent English works; and he thus presents in compact form a fund of information which the student could not collect for himself without a large additional expense and labour, and which possibly he would never obtain at all without timely assistance. With the important but independent study of the practical application of individual theorems the writer does not deal, this branch of the subject being fully treated in already existing English text-books. Moreover, he does not attempt an exhaustive account of crystals from the point of view of the physicist. Mr. Hilton disclaims originality, but the service rendered to science by the production of works of a kind similar to his present one has a special value of its own.

Principles of Arithmetic. By H. O. R. Siefert. (2s. 6d. Heath.)

The author presents in book form the substance of several addresses by him to the teachers of the Milwaukee public schools, embodying his ideas with respect to effective methods of teaching vulgar and decimal fractions, ratio and proportion, and some of the other important rules of arithmetic. Much of the text will be found to be already familiar to the generality of teachers; but, on the other hand, a number of valuable suggestions seem to be original, and the whole is the expression of the author's conviction that arithmetic may be used as a medium of true education and mental discipline if only the opportunities offered by it for drawing from the pupils themselves the elements of their future knowledge be properly used. All Mr. Siefert's methods are not equally good; but, in his preface, he strongly recommends individual teachers to make any such alterations and improvements as may seem to them to be advisable.

A Junior Geometry. By Noel S. Lydon. (2s. Methuen.)

Mr. Lydon provides an elementary course of practical and theoretical work in geometry, and deals with a large portion of the subject-matter of Euclid I.–IV. and VI. In many respects the small volume is a useful one, and the author's method of connecting allied problems and theorems is interesting as well as suggestive. Alterations are needed, however, and also additions (in the form of lemmas, of limitations of statement, and of proofs of construction), before the subject of the text can be held to have been fully and satisfactorily treated.

Elementary Graphs. By R. B. Morgan, B.Litt., L.C.P. (1s. 6d. Blackie.)

A little text-book of the right kind. The theory is clearly explained in simple language, and there are plenty of exercises. A desire to know more of the subject will probably be kindled by the indications which the author gives of the many ways in which the theory can be applied to questions of general interest.

SCIENCE.

Electricity and Magnetism. An Elementary Text-Book, Theoretical and Practical. By R. T. Glazebrook, M.A., F.R.S., Director of the National Physical Laboratory. (7s. 6d. Cambridge University Press. "Cambridge Physical Series.")

With all the crowd of books on elementary chemistry there is plenty of room for the present volume. There is never lack of room, it is said, at the top. A considerable portion of the work "has been in type for a long time. It was used originally," says Mr. Glazebrook, "as a part of the practical work in physics for medical students at the Cavendish Laboratory in connexion with my lectures, and was expanded by Mr. Wilberforce and Mr. Fitzpatrick in one of their 'Laboratory Note-books on Practical Physics.'" Now it has been brought up to date by Mr. Fitzpatrick. The genesis and growth of the book—and this is just how a text-book ought to originate and develop—excites high expectations, which are fully realized. The exposition is ample, lucid, and compact; the illustrative experiments are well devised and set out, and the various apparatus are well described. A considerable number of examples are given to be worked by students, and the answers are appended. There are 270 figures. The volume is beautifully printed and substantially bound, and, altogether, the student will hardly find any more efficient guide to the subject.

Steel and Iron. For Advanced Students. By Arthur R. Hiorns, Head of the Metallurgy Department, Birmingham Municipal Technical School. (10s. 6d. Macmillan.)

Too much stress must not laid on the intimation that the book is "for advanced students"—the sub-title is meant to convey simply "that it is not an elementary book for beginners, and is designed to supply the wants of students pursuing a second or third year's course in a college or technical school." Mr. Hiorns has laboured to present general principles in a comprehensive way, and has worked into his exposition a very large quantity of information that the student would otherwise have to gather from the pages of many heavy volumes or from the "Journals" of the Iron and Steel Institute. The most recent views of authorities on the subject appear to be fully and fairly represented. Mr. Hiorns treats of refractory materials, fuel, ores, methods of extraction, furnaces, processes, and mechanical tests; and his eye is steadily fixed on steel. The selection of matter is marked by practical and pedagogic experience. The statement is quite clear and fluent, and there are 131 pertinent illustrations (besides the frontispiece). The volume is able and judicious, and will prove exceedingly helpful to the students the author has more especially in view.

Elementary Bacteriology. By M. L. Dhingra, M.D., C.M., D.P.H. (3s. net. Longmans.)

Dr. Dhingra designs "not so much to marshal facts as to point out principles and suggest problems"; and, while fully acknowledging the achievements of the science, he frankly recognizes its difficulties and limitations. Part I. explains the characteristics of bacteria and their operation generally in Nature, with practical references to the processes of fermentation, putrefaction, and preservation of foodstuffs. Part II. deals with them in the various forms of disease they set up. The treatment is concise, pointed, and effective. There is a coloured frontispiece (six figures); also twenty-six illustrations in the text.

FRENCH.

A Historical French Grammar. By Arsène Darmesteter, late Professor of the History of the French Language and of Mediæval French Literature at the Sorbonne. Edited by Profs. Ernest Muret and Léopold Sudre. Authorized English Edition by Alphonse Hartog, formerly Professor of French at the Royal Academy of Music. Book II.: *Morphology*, or the Study of the Grammatical Forms. (3s. 6d. Macmillan.)

The name of Prof. Darmesteter guarantees the highest class of workmanship; his pupils MM. Muret and Sudre edited the original work for posthumous publication with filial care; and Prof. Hartog has faithfully observed the tradition. Even where the subject is not a substantive study the volume will be found very useful for collateral reference; and, probably enough, if it get into the hands of pupils, they will read it privately with avidity. A most able, instructive, and interesting work.

An Outline of French Literature. By D. T. Holmes, B.A. (2s. Holden. Prof. Meiklejohn's Series.)

Mr. Holmes has founded his "Outline" on the "Littérature Française" of Prof. Meunier. In brief compass (164 pages) he gives a fairly proportioned, judicious, and readable sketch of the subject. The final chapter, however, might have been considerably fuller with advantage.

A Primer of Old French. By G. H. Clarke, M.A., and C. J. Murray, M.A. (2s. 6d. Blackie.)

The authors presuppose familiarity with modern French, and propose to introduce the student to "a more critical study of the language

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from a historical point of view." An introduction (22 pages) sketches the early history of French, and exhibits outlines of Old French accidence (*Langue d'oïl*). Then "specimens," with "translations" (into modern French) and a few notes (87 pages), furnish reasonable opportunities of exercise. The plan is carefully thought out and very competently executed.

ENGLISH READERS.

The Royal King Infant Readers, Nos. I. and II. (5d. and 6d., Nelson), are prettily and substantially got up, and the matter is appropriate.—*The First Primer* to *McDougall's Alexandra Readers* (2d. and 3d.) is carefully graduated and elaborately illustrated in colours.—*Cassell's Union Jack Series*, Books 2 and 3 (9d. and 10d.), give interesting and simple lessons, with many illustrations, some of them coloured.

Messrs. Horace Marshall & Son have just issued several more of their extremely interesting, prettily illustrated, and attractively got up reading books for young folks: *Stories from the Latin Poets*, by Margaret R. Pease (1s.), and *Children of Odin*, by E. E. Speight, B.A. (1s.), which make Nos. 3 and 4 of the charming "Romance Readers"; *Tales from Chaucer*, admirably told by Clara L. Thomson (2s.); *Selections from Froissart's Chronicles*, edited by N. L. Frazer, B.A. (2s.), "with a view to please and interest, not to worry and perplex," his young readers; *Little English Poems*, arranged and illustrated by Lettice Thomson (1s. 6d.); and *The Adventures of Duke Huon of Bordeaux*, by Beatrice Clay, B.A. (1s. 6d.). All these books would be read with avidity out of school as well as in class.

Mr. J. Logie Robertson, M.A., himself a poet, has already done much for the study of English literature, and now he edits *The Select Tennyson* "for school and college and private study," in three parts—(1) "The Princess," (2) "In Memoriam and Grecian Idylls," (3) "Early Poems and English Idylls" (1s. 6d. each, Longmans)—with excellent judgment and instructive commentary.

No. I. of the "Holborn Geographical Readers" provides an *Introduction to Geography* (9d., Educational Supply Association), which handles the matter in a very attractive fashion, with good illustrations. The type is excellent, and the book is bound for wear.—Stages I. and II. of the "Pestalozzi Series" of *Geographical Readers* (Newmann), also well printed and strongly bound, treat "Home and Neighbourhood" from the "concrete objective standpoint" and in alliance with Nature study. They are simple and lucid, and distinctively illustrated.

Miss Edith Hirons has written *In Nature's Storyland* (2s. 6d., Philip) to furnish "Nature stories to correlate with Nature lessons," and each story is illustrated by a pen-and-ink drawing by E. K. Reader. The children will be delighted with it.—*The Greenwood Tree*, in Mr. Edward Arnold's delightful series of "Literary Reading-Books," is "a book of Nature myths and verses," judiciously chosen and excellently printed, illustrated, and got up.—*Ways of the Six-footed*, by Anna Botsford Comstock, B.S., Lecturer in Cornell University Extension (2s., Ginn), is more advanced. It consists of stories "written with the definite purpose of illustrating the great primal truth that wherever there is life there are problems confronting it, and that the way of solving these problems has been the way to success in the evolution of a species." It is, perhaps, rather for home than for school reading. The treatment is simple, attractive, and very instructive.—*The Insect Folk*, by Margaret Warner Morley (2s., Ginn), is, perhaps, less a reading book than a practical companion to the observation of insects. "Look more than read." It is very interesting and sympathetic. Both the last volumes are excellently printed, illustrated, and got up.

AMERICAN HISTORY.

Hero Stories from American History. By Albert F. Blaisdell and Francis K. Ball. (2s. 6d. Ginn.)

The period drawn upon is the first half century of American national life. The book is meant for pupils of twelve to fifteen, and "for collateral reading in connexion with the study of a formal text-book on American history." The authors have naturally selected "rapid historical narratives, treating of notable and dramatic events," and made free use of personal incidents and anecdotes. The stories are brightly told, and the illustrations are numerous and effective. "Questions for review," books of reference, &c., are usefully supplied in appendix. There is a full index. British susceptibilities need not prevent the use of the book on this side of the water. Print and binding are excellent.

Essentials of American History. By Thomas Bonaventure Lawler, M.A. (4s. 6d. Ginn.)

Mr. Lawler treats in brief compass, and with lucidity and fairness, the political, industrial, and territorial development of America. The earlier history is very fully traced; it is towards the end of the first third of the book (page 119) that we reach the Heights of Abraham, Green's (not Greene's) date for the commencement of the history of the United States. But the book is well proportioned, the matter is judiciously selected, and the style is perspicuous. There are numerous maps and illustrations, which add greatly to the utility of the work. An appendix contains questions on the text and a variety of constitutional information.

First Lessons in United States History. By Edward Channing, Professor of History in Harvard University. (3s. 6d. Macmillan.)

As the title imports, only the main matters are presented, and that in very simple outline. The work is very readable, and will serve its purpose admirably. The print and binding are excellent, and there is an abundance of appropriate illustrations, many of them coloured.

"Source Readers in American History."—No. 4: *The Romance of the Civil War.* Selected and annotated by Albert Bushnell Hart, of Harvard University, with the collaboration of Elizabeth Stevens. (3s. 6d. Macmillan.)

The four volumes of this excellent series throw most welcome light on the various periods. The present work gives 109 extracts illustrative of the actualities of the Civil War period: "it contains something of the spirit of North and South at the beginning of the war, and much about the life of the soldier and the citizen while it was going on, with some of the battle, smoke, and dust." It will contribute powerfully to realization of the historical conditions in the warfare by land and sea, in the hospitals, and in the homes of the people. The national poetry, which centres largely about the Civil War, is suitably represented. The illustrations are fairly numerous and representative, but the real interest lies in the text, and it is many-sided and intense.

MISCELLANEOUS.

Little Poems for Little People. Chiefly by Edward Shirley. (Nelson.)

Mr. Shirley has ventured on a very difficult enterprise, in which his success would probably have been greater if he had been less easily satisfied both with matter and with versification. Yet one can never tell how such poems will "catch on" with children till one tries. He seems to succeed markedly better in the more advanced subjects, in which he contrives to be patriotic without taking leave of common sense.

The Schoolmasters Yearbook and Directory, 1904 (second annual issue), considerably extended (1,090 pages) and markedly improved, furnishes an immediately useful selection of educational information, including a list of 1,200 secondary schools (with numbers, fees, &c.) and biographical details about over 9,000 masters. (5s. net. Swan Sonnenschein.) We wish it a highly deserved success.

The Reformers' Year-Book (formerly the *Labour Annual*), edited by F. W. Pethick Lawrence and Joseph Edwards (1s., the *Echo*, Bride Street, E.C.), is packed full of pertinent statistics and pointed articles, with numerous photographs. Very useful for reference.

Fiscal literature is abundant. *Mr. Balfour's Pamphlet: a Reply*, by Harold Cox, Secretary of the Cobden Club (1s. net, Fisher Unwin), puts the free trade views pointedly and vigorously.—*The Fiscal Puzzle* (1d., Leng) conveniently summarizes the principal arguments advanced by leading speakers on both sides, with rough illustrations, mostly portraits.—"A Candidate" offers *Detailed Proposals for a Tariff Bill* (1d., Boltons, Knightsbridge), maintaining the paradox that all classes would benefit by *ad valorem* duties of 20 per cent. on fully manufactured, and 10 per cent. on partially manufactured, goods imported from foreign countries.—A Lecture on *The Customs System of the United Kingdom and its relation to British Commerce*, by J. A. Kempe, C.B., Deputy Chairman of the Board of Customs (3d. net, London Chamber of Commerce "Higher Commercial Education Pamphlet Series, No. 12") is a very instructive sketch of a large subject.

The second volume of the Rationalist Press Association "Extra Series" is *Haeckel's Critics answered*, by Joseph McCabe, "formerly the Very Rev. Father Antony, O.S.F., Professor of Philosophy and Ecclesiastical History at St. Antony's, Forest Gate" (6d., Watts). It is a courteous and strenuous polemic against assailants of Haeckel's "Riddle of the Universe," impressing a strong warning against ill-advised utterances on matters of such difficulty. Some of the alleged misrepresentations of Haeckel's position—by clergymen, too—seem all but incredible. Mr. McCabe, however, cites chapter and verse; and some answer is painfully necessary. Recent opinions of Dr. A. R. Wallace, Lord Kelvin, Mr. Mallock, and others are reviewed.

The Essex Education Committee have published a second account of *The Essex Field Experiments* (County Technical Laboratories, Chelmsford)—experiments conducted in 1896–1903 on tillage crops (beans, peas, wheat, barley, oats). The compilation has been made by T. S. Dymond, F.I.C., assisted by B. W. Bull, N.D.A. A tabular statement of results is given in appendix. The whole pamphlet deserves to be carefully studied by agriculturists.—Mr. T. S. Dymond has printed his Fabian Society paper on *Continental State-Aid for Agriculture* (6d., Dutton, Chelmsford), in which he deals with Denmark and (more fully) Hungary—both almost purely agricultural countries—adding the application of his inquiries to Great Britain. He urges a better systematization of agricultural education throughout the country. The paper is very instructive and opportune.

An extremely trenchant, racy, and hard-headed volume is *Letters from a self-made Merchant to his Son* (6s., Methuen), by George Horace Lorimer. "I want you to keep in mind all the time," writes the old

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pork-packer of Chicago, "that steady, quiet, persistent, plain work can't be imitated or replaced by anything just as good"; and "a man's as good as he makes himself, but no man's any good because his grandfather was." He had been to Europe once himself, and this is his idea of the bearing of education on business: "I've always made it a rule to buy brains, and I've learnt now that the better trained they are the faster they find reasons for getting their salaries raised. The fellow who hasn't had the training may be just as smart, but he's apt to paw the air when he's reaching for ideas." The points are driven home with marked ability and efficiency. They ought to be exceedingly useful to beginners in all sorts of businesses. There are 18 illustrations.

NEW YEAR GIFT-BOOKS.

For Boys.

With Stanley on the Congo, by Miss Douglas (2s., Nelson), gives a fluent narrative of Congo exploration extending over eleven years (1879–89). It is a story of dogged patience and perseverance, astute management, and courageous conduct. A most interesting addition to the "Travel Series." Eight full-page illustrations.

Won in Warfare, by Charles R. Kenyon (2s. 6d., Nelson), recounts exciting adventures of a young English officer among the backwoodsmen and Red Indians of North America, and in the ranks of the Colonists fighting against England in the War of Independence. It is the heroine that is "won in warfare." A very lively story. Two illustrations by G. Leslie Hunter.

Tales of St. Austin's, by P. G. Wodehouse (3s. 6d., Black), consists of some sixteen stories, almost all reprints from the *Captain* and the *Public School Magazine*. Boys will like them. Twelve full-page illustrations.

Jake, by Adela Frances Mount (1s. 6d., Nelson), is a rather pathetic story of a London waif, a boy of fourteen, who had drifted up from Birmingham, where he had started life as a workhouse baby. He is a good fellow, though, and contrives to look after a little girl and boy left alone in the world, as well as to get on a bit himself. Two coloured illustrations.

Timothy's Quest, by Mrs. Wiggin (1s., Gay & Bird), is a "popular edition" (in paper covers) of a very charming and clever story, told with great humour and sympathy.

For Girls.

Mark's Princess, by Mrs. Edwin Hohler (1s. 6d., Nelson), is a holiday tale of four brothers, who convert a smuggler's cave into a "palace" of their imagination, and elect a little girl visitor as "Princess." A pleasant and amusing story. Numerous illustrations by Rosa C. Petherick.

Dorothy's Difficulties, by M. C. Cordue (1s. 6d., Nelson), is "a story for children." Dorothy is the eldest of four orphan children, and her difficulties arise from her wilfulness in the task of looking after her brother and sisters. The second half of the volume is concerned with "Dorothy and the others." It will be found interesting, and not a little suggestive, to youngsters. Two coloured illustrations.

The Little Brown Linnet, by Sheila E. Braine (1s., Nelson), tells charmingly and simply how a little girl, by a brave act, saved her father from a serious misfortune. "She wore a brown frock and pretty brown hat; her hair was brown, so were her bright eyes; and more people than one were apt jokingly to call her a brown linnet." Two illustrations.

French Gift-Books.

Messrs. Hachette offer a variety of attractive volumes, beautifully printed and handsomely got up. *Mon Journal* for 1902-03 (10 fr.) fully maintains its high reputation as a miscellany of interest for children of eight to twelve, with countless clever illustrations in colours and in black and white. Elder readers, too, will find many of the varied contents sufficiently engaging. For these, however, the publishers make more special provision in the fifth annual volume of *Lectures pour Tous* (9 fr.)—"revue universelle et populaire"—1,124 pages, with an abundance of capital illustrations. The papers are instructive on a wide variety of subjects of interest, and they are written with simplicity and verve alike. With the spread of the study of French, these popular journals ought to be better known in this country. They would be helpful and stimulating to all learners.

Une Dette de Cœur, by Julie Borius, with forty-two illustrations (many of them full-page), belongs to the "Bibliothèque des Ecoles et des Familles" (3 fr.)—a simple story of a boy of eleven, an orphan, and his relatives, guardian, and friends, chiefly in Brittany, with boyish escapades, and later complexities of a more sober nature.—Similar in form, and of the same series, is *La Louisiane*, by Eugène Guénin, Lauréat de l'Académie Française, with sixty-eight illustrations and two maps (4 fr.)—a most interesting popular history of the "colonie perdue," with all the romance and the hardships of exploration and the difficulties of colonial government.—A third of the series is *L'Ouragan*, by Melandri, with thirty-six illustrations after A. Paris (3 fr.)—a story interwoven with startling aerial adventures. The series is spaciously printed and gorgeously got up.

La Gondole Fantôme, by Gustave Toudouze with fifty-two illustrations (many of them full-page) by Vogel (10 fr.), is a story of the year 1797. As the title indicates, the scene is laid in Venice, and the action turns on a mystery: "Ce fut notre grande ancêtre, le gondolier Marco Fano, dont l'embarcation conduisit le doge [Marino Faliero] à la Piazzetta, à travers la tempête, et le fit débarquer entre les deux colonnes où se font les exécutions, lieu fatal et funeste. . . . Depuis, cette gondole meurtrière, gardée dans notre famille comme une redoutable relique, s'est transmise de génération en génération, sans jamais sortir de l'héritage des Fano. . . . Fatale aux autres, fatale à tous, elle te serait funeste également. . . . C'est la fantôme d'un passé sanglant!" The conflicting political ideas of the time are ingeniously interwoven with interesting private episodes, but quite in subordination to the story.

La Mission de Geneviève, by B.-A. Jeanroy, with fifty-two illustrations (a number of them full-page), by Tofani (6 fr.), is the story of a family difficulty, the scene being mostly in France, partly in Italy. Geneviève's father and mother have long been separated, and she has been brought up in the belief that her mother is dead, but gradually apprehends that she is alive. "Ce que je voudrai à présent de toutes mes forces, pensait elle, c'est réconcilier papa et maman" (page 64). A very pretty story, cleverly and pleasantly developed.

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MATHEMATICS.

15353. (H. B. Reynolds.)—In a house are two cisterns respectively 3 ft. cube and 4 ft. cube. It is required to replace these by two new cube cisterns, one less than 3 ft. cube, the other more than 4 ft. cube, so that the two new ones may together contain the same as the two original ones, *i.e.*, 91 cubic feet. The answer must be exact in vulgar fractions—not an approximation in decimals.

Solution by D. Biddle.

Let $(a-v)^3+(b+v)^3=a^3+b^3$, where $a<b$, and, of necessity, $u>v$. The answer being required in exact vulgar fractions, let z be the L.C.M. of the denominators of u and v, and let $u=x/z$, $v=y/z$. Then we obtain

$$(az-x)^3+(bz+y)^3=(a^3+b^3)z^3 \quad \ldots\ldots(1),$$

whence $x^3-y^3+3bz(x^2-y^2)+3b^2z^2(x-y)=3(a+b)xz\{x+(b-a)z\}$...(2)

and

$$\{(a+b)z-(x-y)\}\{(az-x)^2-(az-x)(bz+y)+(bz+y)^2\}=(a^3+b^3)z^3 \ldots(3).$$

From (2), we have $x^3-y^3\equiv 0 \pmod{3z}$.....(4)

and $3(a+b)xz\{x+(b-a)z\}\equiv 0 \pmod{x-y}$ .....(5).

From (3), we have $(a^3+b^3)z^3\equiv 0\{\text{mod }(a+b)z-(x-y)\}$ .....(6),

whence $(a^2-ab+b^2)z^2(x-y)\equiv 0\{\text{mod }(a+b)z-(x-y)\}$.....(7).

Taking (4), let $x-y=n$. Then x^3-y^3 becomes $3nx^2-3n^2x+n^3$, and, since 3 divides the whole, it divides n. Let $n=3n_1$; then, from (3) and (7), we have

$$x^2-3n_1x+3n_1^2+\{(b-a)x-(2b-a)n_1\}z=\frac{(a^2-ab+b^2)n_1z^2}{(a+b)z-3n_1} \quad \ldots(8).$$

From (5), we now have $(a+b)xz\{x+(b-a)z\}\equiv 0 \pmod{n_1}$.....(9).

From (8) and (9), $zx\equiv 0 \pmod{n_1}$ .....(10),

whence also $zy\equiv 0 \pmod{n_1}$ .....(11).

In the present case n_1 is a factor of x and of y, but this does not appear to be necessary. It must not be supposed, moreover, that n_1 enters into the composition of z as well as x and y, for, if such were the case, u and v would not be reduced to their lowest terms.

Now, if we regard the cubes as varying gradually whilst their sum remains constant, the differential calculus teaches us that the infinitesimal element first taken from the edge of the smaller cube will bear to that first added to the edge of the larger the inverse ratio $3b^2:3a^2$. Therefore we are not surprised to find that the common denominator of the required (exact) fractions is closely related to $3(b^2-a^2)$, and in the case before us this is the actual value of z; also, since $b-a=1$, z here $=3(a+b)$. But it is possible that in some cases z may be a multiple, or on the other hand a factor, of $3(b^2-a^2)$. Or it may occur, as indicated by (8), that z divides $x^2-3n_1x+3n_1^2$, although in the present case they only have a common factor. But in all cases, since $x^3-y^3=9n_1(x^2-3n_1x+3n_1^2)$, we have, by (4), $3n_1(x^2-3n_1x+3n_1^2)\equiv 0 \pmod{z}$.....(12),

and, by (8), $3(a^2-ab+b^2)n_1^2z\equiv 0\{\text{mod }(a+b)z-3n_1\}$ .....(13),

which should be taken in conjunction with (7). Let

$$(a^2-ab+b^2)n_1z^2=\lambda\{(a+b)z-3n_1\} \quad \ldots\ldots(14)$$

and $3(a^2-ab+b^2)n_1^2z=\mu\{(a+b)z-3n_1\}$ .....(15).

Then $\lambda:\mu=z:3n_1$, and we obtain

$$(a+b)\lambda-\mu=(a^2-ab+b^2)n_1z \quad \ldots\ldots(16),$$

and it is clear, from (14) and (15), that

$$3(a^2-ab+b^2)n_1z\equiv 0\{\text{mod }(a+b)z-3n_1\} \quad \ldots\ldots(17),$$

which is an advance upon both (7) and (13). Let

$$3(a^2-ab+b^2)n_1z=\rho\{(a+b)z-3n_1\} \quad \ldots\ldots(18);$$

then $n_1\rho=\mu$, whilst $z\rho=3\lambda$, whence, by (16),

$$\rho^2=3(a^2-ab+b^2)\lambda\mu/\{(a+b)\lambda-\mu\} \quad \ldots\ldots(19).$$

In the present case $\rho=\frac{1}{3}n_1z$, and, since $z=3(a+b)$, we have

$$n_1=(a+b)^2-3(a^2-ab+b^2).$$

But, in (12), take $3n_1(x^2-3n_1x+3n_1^2)=mz$ .....(20);

then $x=\{(12mn_1z-27n_1^4)^{\frac{1}{2}}+9n_1^2\}/(6n_1)$ .....(21),

whilst $y=\{(12mn_1z-27n_1^4)^{\frac{1}{2}}-9n_1^2\}/(6n_1)$ .....(22).

In the present case $m=n_1^3$, giving $x=40$, $y=10$, with $z=21$, n_1 being 10. Hence the required internal measurements of the new cisterns are $1\frac{3}{21}$ ft. and $4\frac{10}{21}$ ft. respectively.

15409. (H. S. Vandiver.)—*A certain Aspect of* Fermat's *Theorem.*—If a is any given positive integer, then there is an infinity of composite integers M (each containing more than one distinct prime factor) such that $a^M\equiv a \pmod{M}$. For example, if $a=2$, then $M=11.31$, 17.257, 23.89, ... If $a=3$, then, $M=7.13$, 11.61, ...

Solution by Lt.-Col. Allan Cunningham, R.E.

Raise the given a to any power ξ, and find two proper (unequal) prime factors (say, p, q) of $(a^\xi-1)$ so that $a^\xi\equiv 1 \pmod{p}$ and $\pmod{q}$, and therefore also $\pmod{pq}$, where $p=m\xi+1$, $q=n\xi+1$. Here

$$pq=(mn\xi+m+n)\xi+1.$$

But $(a^\xi)^{mn\xi+m+n}\equiv 1 \pmod{pq}$; therefore $a^{pq-1}\equiv 1 \pmod{pq}$ and

$$a^{pq}\equiv a \pmod{pq}.$$

15365. (Professor Sanjána, M.A.)—In a parabola PQ is the normal chord at P, and AN the abscissa of P. If P_1P and P_2P are also normal chords, prove that $P_1P.P_2P=PQ.AN$.

Solutions (I.) *by* R. F. Davis, M.A.; (II.) *by* R. Tucker, M.A.; (III.) *by* H. J. Woodall, A.R.C.S.

(I.) Let the tangents at P_1, P_2 intersect in T. Then it may be shown that ST is collinear with, and equal to, SY, the perpendicular from S on the tangent at P. Hence $SP_1.SP_2=ST^2=SY^2=SA.SP$. Moreover, $AN_1.AN_2=4SA^2$. The normal chord PQ at $P=4SP^{\frac{3}{2}}.SA^{\frac{1}{2}}/AN$. Hence the relation as stated.

(II.) Let P, P_1, P_2 be the three points m, m_1, m_2; then

$$m+m_1+m_2=0 \quad \ldots\ldots(1).$$

Then PQ, being a normal chord, is the join of m, $-(m^2+2)/m$; therefore its length $=4a\sqrt{(m^2+1)^3}/m^2$ .....(2).

$$\begin{aligned}PP_1.PP_2&=\sqrt{[(m^2-m_1^2)^2+4(m-m_1)^2]}\sqrt{[(m^2-m_2^2)^2+4(m-m_2)^2]}\,a^2\\&=(m-m_1)(m-m_2)\sqrt{[(m_1^2+4)(m_2^2+4)]}\,a^2 \text{ by (1)}\\&=2(m^2+1)\sqrt{[m_1^2m_2^2+4(m_1^2+m_2^2)+16]}\,a^2\\&=4(m^2+1)^{\frac{3}{2}}a^2;\end{aligned}$$

because $m_1m_2=2$, since the conormal point is P (see *Co-normal Points on a Parabola*, § 15, Y $=2am$, and also $=amm_1m_2$); therefore

$$P_1P.P_2P=AN.PQ.$$ [Rest in Vol.]

12880. (Professor Matthews, M.A.)—Prove that

$\tan^{-1}\frac{1}{4}+\tan^{-1}\frac{1}{9}+\tan^{-1}\frac{1}{16}+\ldots$ ad inf. $=\tan^{-1}(-\tanh\pi/\sqrt{2}\cot\pi/\sqrt{2})$, when all the $(\tan^{-1})$'s are to be taken between 0 and $\frac{1}{2}\pi$; and verify this result numerically, so as to show the equality of the two expressions within 1 degree of angle.

Solutions (I.) *by* Professor Sanjána, M.A.; (II.) *by* F. P. Andersen.

(I.) In the identity $\sin\alpha=\alpha\Pi_1^\infty(1-\alpha^2/n^2\pi^2)$, suppose α to be the complex number $x+\iota y$. Taking logarithms, we get

$$\log(\sin x\cosh y+\iota\cos x\sinh y)=\log(x+\iota y)+\Sigma_1^\infty\log\left(1-\frac{x^2-y^2}{n^2\pi^2}-\iota\frac{2xy}{n^2\pi^2}\right).$$

Taking principal values only, we have the imaginary part on the left $=\iota\tan^{-1}(\tanh y\cot x)$; that on the right

$$=\iota\tan^{-1}\frac{y}{x}+\iota\Sigma_1^\infty\tan^{-1}\frac{-2xy}{n^2\pi^2-x^2+y^2}.$$

Put $x=y=\pi/\sqrt{2}$, and cancel ι:

$$\begin{aligned}\tan^{-1}(\tanh\pi/\sqrt{2}\cot\pi/\sqrt{2})&=\tan^{-1}1+\Sigma_1^\infty\tan^{-1}(-1/n^2)\\&=-\tan^{-1}\tfrac{1}{4}-\tan^{-1}\tfrac{1}{9}-\tan^{-1}\tfrac{1}{16}\ldots \text{ ad inf.},\end{aligned}$$

which is the required result.

(II.) $$\Sigma_1^\infty\tan^{-1}\frac{1}{n^2}=\tan^{-1}\frac{S_1-S_3+S_5\ldots}{1-S_2+S_4\ldots}$$

where $S_m=$ sum of products of such quantities as $1/n^2$ taken m together.

Now $$\theta-\frac{\theta^3}{3!}+\frac{\theta^5}{5!}\ldots\equiv\theta\left(1-\frac{\theta^2}{\pi^2}\right)\left(1-\frac{\theta^2}{2^2\pi^2}\right)\ldots$$

$$\equiv\theta\left[1-\frac{\theta^2}{\pi^2}S_1+\ldots+(-1)^n\frac{\theta^{2n}}{\pi^{2n}}S_n\ldots\right].$$

Hence, equating coefficients of θ^{2n+1}, $S_n/\pi^{2n}=1/(2n+1)!$; therefore

$$\Sigma_1^\infty\tan^{-1}\frac{1}{n^2}=\tan^{-1}\frac{\pi^2/3!-\pi^6/7!+\pi^{10}/11!\ldots}{1-\pi^4/5!+\pi^8/9!\ldots}=\tan^{-1}\frac{N}{D}, \text{ say.}$$

Then $$\begin{aligned}D+\iota N&=1+x^2/3!+x^4/5!+x^6/7!\ldots \qquad [x=\pi(1+\iota)/\sqrt{2},\\&=\sinh x/x \qquad\qquad x^4=-\pi^4]\\&=\frac{1-\iota}{\pi\sqrt{2}}(\sinh\pi/\sqrt{2}\cos\pi/\sqrt{2}+\iota\sin\pi/\sqrt{2}\cosh\pi/\sqrt{2}).\end{aligned}$$

$$N/D=(1-\tanh\pi/\sqrt{2}\cot\pi/\sqrt{2})/(1+\tanh\pi/\sqrt{2}\cot\pi/\sqrt{2}).$$

Now given series $=\tan^{-1}N/D-\frac{1}{4}\pi=\tan^{-1}(-\tanh\pi/\sqrt{2}\cot\pi/\sqrt{2})$.

15348. (Rev. T. Wiggins, B.A.)—ABC is a triangle, and P is the middle point of BC. Draw AD at right angles to BC and from P draw PQ parallel to DA, so that Q and A are on the same side of BC. Let $2PQ=AB+AC$. Draw QR to meet DA in R, so that the angles PQR and QBP are equal. Show that RD is equal to one of the sides AB, AC.

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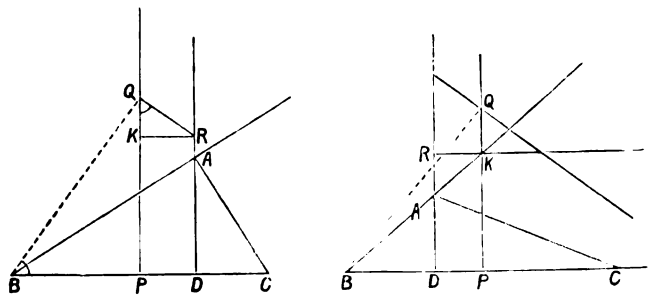
Solutions (I.) *by* R. Tucker, M.A.; (II.) *by* A. M. Nesbitt, M.A., W. H. L., *and* B. C. Wallis, F.C.P.

(I.) Through R draw RK parallel to BC; then the triangles RQK,



QBP are similar; therefore $QK/KR = BP/QP = a/(b+c)$, and

$$KR = (c^2 \sim b^2)/2a;$$

therefore $QK = (c^2 \sim b^2)/2(b+c) = \frac{1}{2}(c \sim b)$; therefore &c.

(II.) Since

$\angle PQR = \angle QBP = \angle QCP$,

QR is perpendicular to QC; therefore, if DV be parallel to QR, $CP : PQ = VP : PD$. Now

$CD^2 - BD^2 = CA^2 - BA^2 = 2DP.BC$.

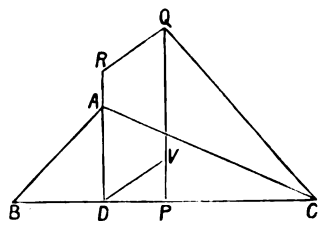
But $CA + AB = 2QP$,

$CA - AB = 2(QP - AB)$;

whence

$QP^2 - QP.AB = DP.PC = QP.PV$;

therefore $QP - AB = PV$; therefore $QV = RD = AB$.



15379. (Rev. Prebendary Whitworth, M.A.)—In how many different orders can the eight digits 3, 3, 3, 3, 7, 7, 7, 7 be arranged so as to express a number divisible by 37?

Solution by Lt.-Col. Allan Cunningham, R.E.

The following numbers evidently contain 37 as a factor—37, 333, 777, 703, 7733, 700003, 30000007, 30007.

Hence the following multiples of 37 can be formed:—(1) 37373737; (2) 77337733 (unique); 6 arrangements of 37, 333, 777; 3 arrangements of 37, 37, 7733; (1) 37773337; (2) 33737377 (unique)—*Total*, 13.

Note.—The Proposer remarks that the arrangement 37773337 is counted twice, for it is one of the arrangements of 37, 37, 7733, and is also mentioned by itself; he has also found six other arrangements which bring the total number up to 18, viz.: 33777337, 37337773, 37733377, 37737373, 73337737, 73737337.

8712. (Professor Schoute.)—A surface S of the third order passing through two non-coplanar lines a and b is given, and a line l intersects a in A, b in B, and S for the third time in C, under the condition AC = CB. Find (1) the locus of the line l, and (2) its intersection with the given surface S.

Note by A. M. Nesbitt, M.A.

The plane which bisects at right angles the line which is perpendicular to both the given lines a, b will also bisect every line l which cuts both; hence the cubic surface S must break up into this plane and a quadric, *i.e.*, a hyperboloid of one sheet of which a and b are non-intersecting generating lines. It appears clear that a straight line which joins two random points on a couple of random generating lines (belonging, however, to the same system) of any given hyperboloid will be too unrestricted in its movements to trace out any locus at all; and, further, that its intersections with the given surface S will comprise every point in the two lines a, b and such points as are collinear with them in the plane referred to. If we take $y = mx$, $z = c$ and $y = -mx$, $z = -c$ for the lines a, b respectively, the "third intersections" of l and S will all lie in the plane of xy; and, moreover, if α, β be the x co-ordinates of A and B, the co-ordinates of C will be $\{\frac{1}{2}(\alpha+\beta), \frac{1}{2}[m(\alpha-\beta)], 0\}$. By properly choosing α and β (which are quite unrestricted) the point C may be made to take up any position at pleasure on the plane $z = 0$.

Note on the Graphic Solution of Simultaneous Equations in three Unknowns.

By B. C. Wallis, F.C.P.

Take the x, y, and z axes at right angles and imagine the y axis swung downwards through a right angle so that YO and OZ are one straight line. Then an equation of the form $ax + by + cz = d$ is represented by a plane which cuts the plane of OX and OZ at the line $y = 0$, $ax + cz = d$; the plane of OX and OY at the line $z = 0$, $ax + by = d$: and the plane of OY and OZ at the line $x = 0$, $by + cz = d$.

An equation of the form $x^2 + y^2 + z^2 = a$ is represented by the surface of the sphere which has its centre at the origin and radius $\sqrt{a}$; and an equation $x^2 - 2ax + y^2 - 2by + z - 2cz = d - a^2 - b^2 - c^2$ by the surface of a sphere centre (a, b, c) and radius $\sqrt{d}$.

An equation of the form $x^2 + y^2 = a$ is represented by the surface of a cylinder of which OZ is the axis and $\sqrt{a}$ the sectional radius: while $y^2 + z^2 = b$ has OX for axis and $\sqrt{b}$ as sectional radius.

Similarly an equation $x^2 - 2ax + z^2 - 2cz = d - a^2 - c^2$ is represented by the surface of a cylinder having an axis parallel to OY through (a, o, c) and a sectional radius $\sqrt{a}$.

Using these principles, problems of forms of which the following three are examples may be worked graphically:—

$2x + y + z = 16$, $x + 2y + z = 9$, $x + y + 2z = 3$ ..... (A):

$x^2 + y^2 + z^2 = 25$, $x + y + z = 6$, $2x + y + z = 8$ ..... (B);

$x^2 + y^2 = 25$, $x + y + z = 8$, $x + 2y + 3z = 13$ ..... (C).

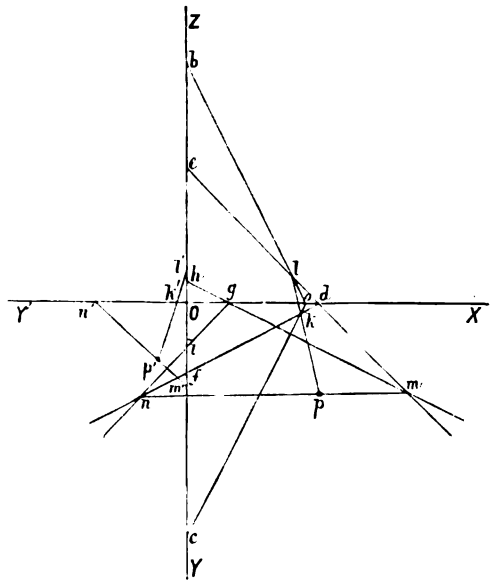


Fig. A.

Problem A.—$2x + y + z = 16$ is represented by abc, $x + 2y + z = 9$ by def, $x + y + 2z = 3$ by ghi. The intersection of abc and def is lk, of ghi and def is mn, of lk and mn is p. p gives $x = 9$. Imagine OY swung back and the whole swung through a right angle round OZ; then $l'k'$ is the new position of lk, $m'n'$ of mn, and p' of p. p' gives $y = 2$ and $z = -4$.

Solution—$x = 9$, $y = 2$, $z = -4$. [Rest in Vol.]

15434. (A. Ensor.)—Find the equation (E) whose roots are the ratios of the roots of $x^3 + px + q = 0$, and solve (E) when one root is given.

Solution by C. M. Ross.

Put $f(x) \equiv x^3 + px + q = 0$. Let $y = \beta/\alpha$ = ratio of two roots; then, since $f(\beta) = 0$, $f(y\alpha) = 0$, also $f(\alpha) = 0$. Hence the required equation is obtained by eliminating α between $f(y\alpha) = 0$ and $f(\alpha) = 0$, *i.e.*, between $y^3\alpha^3 + py\alpha + q = 0$ and $\alpha^3 + p\alpha + q = 0$. By cross multiplication $\alpha^3/[py(y-1)] = \alpha/[q(1-y^3)] = 1/[py(y^2-1)]$; therefore

$$q^2(y^2 + y + 1)^3 + p^3y^2(y+1)^2 = 0,$$

which is the required equation (E).

Again, on expanding (E), it becomes

$$q^2y^6 + 3q^2y^5 + (6q^2 + p^3)y^4 + (7q^2 + 2p^3)y^3 + (6q^2 + p^3)y^2 + 3q^2y + q^2 = 0,$$

i.e., $q^2(y^3 + 1/y^3) + 3q^2(y^2 + 1/y^2) + (6q^2 + p^3)(y + 1/y) + 7q^2 + 2p^3 = 0$,

which is a reciprocal equation. Put $y + 1/y = z$, and equation reduces to

$$q^2z^3 + 3q^2z^2 + (3q^2 + p^3)z + q^2 + 2p^3 = 0 \quad \text{.....(E')}.$$

Now, according to the Question, one root of (E) is known; but it is immaterial whether the root is considered of (E) or of (E'). Let it be of (E'); denote it by Q; then, if other roots are β and γ,

$$Q + \beta + \gamma = -3, \quad Q\beta + \beta\gamma + \gamma Q = (3q^2 + p^3)/q^2 \text{.....(i., ii.)},$$

$$Q\beta\gamma = (q^2 + 2p^3)/q^2 \text{.....(iii.)}.$$

From (i.) and (iii.), $\beta - \gamma = \{(3+Q)^2Qq^2 + 4(q^2 + 2p^3)\}^{\frac{1}{2}}/q\sqrt{Q}$;

therefore

$$\beta = \{-(3+Q)q\sqrt{Q} + [(3+Q)^2Qq^2 + 4(q^2 + 2p^3)]^{\frac{1}{2}}\}/2q\sqrt{Q}$$

and $\gamma = \{-(3+Q)q\sqrt{Q} - [(3+Q)^2Qq^2 + 4(q^2 + 2p^3)]^{\frac{1}{2}}\}/2q\sqrt{Q}$.

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Again, since $\beta+\gamma = \{(3q^2+p^3)Q+q^2+2p^3\}/Q^2q^2$ by (ii.)

$= -(3+Q)$ by (i.),

$(3+Q)^2Qq^2+4(q^2+2p^3) = 3q^2(Q^2+2Q+3)-Qp^3$;

therefore the roots β and γ may be written

$$\{-(3+Q)q\sqrt{Q}\pm[3q^2(Q^2+2Q+3)-Qp^3]^{\frac{1}{2}}\}/2q\sqrt{Q}.$$

Again $x+1/x = Q$; therefore

$x = \frac{1}{2}\{-Q\pm(Q^2-4)^{\frac{1}{2}}\}$ and $x+1/x = \{-(3+Q)q\sqrt{Q}\pm m\}/2q\sqrt{Q}$;

$\therefore\ x = \{-(3+Q)q\sqrt{Q}\pm m\pm[\{-(3+Q)q\sqrt{Q}\pm m\}^2-16q^2Q]^{\frac{1}{2}}\}/4q\sqrt{Q}.$

Thus the roots of the equation (E) are $\frac{1}{2}[-Q\pm\sqrt{(Q^2-4)}]$

and $1/4q\sqrt{Q}\{-(3+Q)q\sqrt{Q}\pm m\pm[\{-(3+Q)q\sqrt{Q}\pm m\}^2-16q^2Q]^{\frac{1}{2}}\}$,

where $m^2 \equiv 3q^2(Q^2+2Q+3)-Qp^3$.

15125. (G. H. Hardy, M.A.)— Prove directly that

$$\lim_{k=1}\int_1^{1,k}\frac{du}{\sqrt{[(u^2-1)(1-k^2u^2)]}} = \tfrac{1}{2}\pi.$$

Solution by the Proposer.

Put $u^2 = \cos^2\phi+(1/k^2)\sin^2\phi$, $u\,du = (1/k^2-1)\cos\phi\sin\phi\,d\phi$, when the integral beomes $\frac{1}{k}\int_0^{\frac{1}{2}\pi}\frac{d\phi}{\sqrt{[\cos^2\phi+(1/k^2)\sin^2\phi]}}$, the limit of which for $k=1$ is $\frac{1}{2}\pi$. More generally, if $f(u)$ is continuous,

$$\lim_{k=1}\int_1^{1/k}\frac{f(u)\,du}{\sqrt{\{(u^2-1)(1-k^2u^2)\}}} = \tfrac{1}{2}\pi f(1).$$

[Indirectly the result is obvious, for the integral is known to be equal to K'.]

15411. (Rev. T. Roach, M.A.)—Prove that the series

$$\frac{1}{1.2.4.5}+\frac{1}{3.4.6.7}+\frac{1}{5.6.8.9}+\ldots = \frac{1}{36}.$$

Solutions (I.) *by* Lionel E. Reay, B.A., G. A. Carle, M.A., B.Sc. (Edin.), *and others;* (II.) *by* H. J. Woodall, A.R.C.S.

(I.) n-th term $= \frac{1}{(2n-1)2n(2n+2)(2n+3)}$. This can be written

$$\frac{1}{12}\left(\frac{1}{2n-1}-\frac{1}{2n+3}-\frac{1}{n}+\frac{1}{n+1}\right);$$

$\therefore\ 12S = (\frac{1}{1}-\frac{1}{3}-\frac{1}{4}+\frac{1}{5})+(\frac{1}{3}-\frac{1}{7}-\frac{1}{5}+\frac{1}{7})+(\frac{1}{5}-\frac{1}{9}-\frac{1}{6}+\frac{1}{8})+\ldots = \frac{1}{3}$;

$\therefore\ S = \frac{1}{36}$.

(II.) Series $= \frac{1}{3}\left(\frac{1}{1.5}-\frac{1}{2.4}+\frac{1}{3.7}-\frac{1}{4.6}+\frac{1}{5.9}-\frac{1}{6.8}+\ldots\right)$

$$= \frac{1}{3}\left[\frac{1}{4}\left(1-\frac{1}{5}+\frac{1}{3}-\frac{1}{7}+\frac{1}{5}-\frac{1}{9}+\frac{1}{7}-\frac{1}{11}+\frac{1}{9}-\frac{1}{13}+\cdots\right)\right.$$
$$\left.-\frac{1}{2}\left(\frac{1}{2}-\frac{1}{4}+\frac{1}{4}-\frac{1}{6}+\frac{1}{6}-\frac{1}{8}+\ldots\right)\right]$$

$$= \frac{1}{3}\left[\frac{1}{4}\left(1+\frac{1}{3}\right)-\frac{1}{2}\cdot\frac{1}{2}\right] = \frac{1}{36}.$$

15437. (C. E. Youngman, M.A.)—Two circles (radii R, r and distance d from centre to centre) are so placed that $d^2 = R^2+14Rr+r^2$ (r negative when $d<R$). Show that (1) any number of triads of circles mutually tangent can be drawn touching both these circles, the first at A, B, C, the second at A', B', C'; (2) $\Sigma\cot A(=k)$ and $\Sigma\cot A'(=k')$ are constants, connected by the relation $4(kk'\pm3) = 7(k\pm k')$. [When the two circles are equal $k=k'=2$ or $\sqrt{3}$; and when one of them opens into a straight line $k=\infty$ and $k'=1\frac{1}{4}$.]

Solution by R. F. Davis, M.A.

If three circles of radius a touch each other two and two, their centres form an equilateral triangle of side $2a$. From the centroid of this triangle as centre can be described two circles of radii $a(2/\sqrt{3}\pm1)$ each of which touches the three original circles, the points of contact for any one circle forming a similarly situated equilateral triangle. Hence it is always possible to describe an infinite number of triads of equal circles touching each other two and two, and also touching two given circles provided the latter are concentric and have their radii in the ratio

$$2+\sqrt{3}:2-\sqrt{3}.$$

Invert from any point and there follows the porismatic relation as stated. The triangle ABC inverts into an equilateral triangle from either of the "isodynamic" points whose distance from the circumcentre $= R[\cot\omega\mp\sqrt{3})/(\cot\omega\pm\sqrt{3})]^{\frac{1}{2}}$ (Neuberg). Since this distance is constant and R is constant, so also is ω. The relation between the Brocard angles when $d>R$ is given by

$$[(k+\sqrt{3})(k'+\sqrt{3})]/[(k-\sqrt{3})(k'-\sqrt{3})] = [(2+\sqrt{3})/(2-\sqrt{3})]^2,$$

which reduces to $4(kk'+3) = 7(k+k')$. When $d<R$ (and R encloses r)

$$4(kk'-3) = 7(k-k').$$

QUESTIONS FOR SOLUTION.

15480. (Robt. W. D. Christie.)—In the Pellian equation with any prime of form $4m+1$ and convergents p_n, q_n as usual, prove

$$(q_n)^2+(q_{n+1})^2 = q_{2n+1}.$$

E.g., $p=277$; then $22213^2+(6524)^2 = 535979945$

where $89204841182-277\cdot535979945^2 = -1$.

15481. (Lt.-Col. Allan Cunningham, R.E.)—Factorize completely

$$N = 96^{18}+1.$$

15482. (James Blaikie, M.A.)—Find two numbers of eleven digits such that in each case the square of the number is terminated by the eleven digits of the number; and show that the sum of these two numbers is necessarily $10^{11}+1$.

15483. (Professor Sanjána, M.A.)—Find in positive integers all the solutions of $13k+21l+29m+37n = 300$.

15484. (Lt.-Col. J. Hickman.)—Smith takes a number in a small sweepstakes of 100 chances at 2s. 6d. each on a race in which 12 horses are entered. After drawing he forgets the name of the horse he drew, remembering only that it began with the letter *N*. When the race has been run he learns that the name of the winner begins with an *N*. The only further light he has as to the probability of his having won is that he believes $\frac{1}{20}$ of all racers bear names beginning with *N*. Proceeding on that assumption, find the precise mathematical value of his chance if the winner is to take $\frac{2}{3}$ of the stakes.

15485. (D. Biddle.)—A point, being taken at random in each of two sides of a square, is joined to the extremities of the side which is respectively opposite. Find the mean area of that portion of the square which lies between both pairs of lines so drawn, when the sides selected for the random points are (1) opposite, (2) contiguous.

15486. (C. M. Fordick.)—If n points are taken at random on a circumference of length C, what is the probability that an arc of length C/p can be found which will cover r or more of the points?

15487. (A. M. Nesbitt, M.A.)—Resolve into factors

$$\begin{vmatrix} a & . & . & l & . & . \\ . & b & . & . & m & . \\ . & . & c & . & . & n \\ g & . & . & d & . & . \\ . & h & . & . & e & . \\ . & . & k & . & . & f \end{vmatrix}.$$

15488. (G. H. Hardy, M.A.)—[See Question 15361.]—Find the area of the diagonal triangle of a quadrilateral, given the equations of its sides in areal co-ordinates.

15489. (Professor Nanson.)—Show that the product of the normals drawn to a plane section of the cone $ax^2+by^2+cz^2=0$ from its vertex is $p^4\frac{(b-c)(c-a)(a-b)}{\lambda\mu(\lambda-\mu)}$ where p is the distance of the plane from the vertex and λ, μ are the parameters of the concyclic cones which touch a parallel plane through the vertex; and deduce the value of the product of the four normals to a conic from a point on its plane.

15490. (R. Tucker, M.A.)—Find the envelope of a parabola which cuts a given parabola in four points three of which are co-normal points.

15491. (L. Isserlis.)—On a circle centre O are taken points p, q, r such that the arcs pq, qr are equal. Lines pP, qQ, rR are drawn parallel to a common tangent of the circle and a concentric conic meeting the latter in P, Q, R. Show that the tangent at Q to the conic is parallel to PR.

15492. (W. J. Greenstreet, M.A.)—Through the feet of the normals from a point P to a rectangular hyperbola passes another rectangular hyperbola such that its normals at these four points are concurrent. Find the point of concurrence and the locus of P if the two curves are equal.

15493. (C. M. Ross.)—Two straight lines move between two rectangular axes in such a way that their ends are always concyclic. Find the locus of the centre of the circle through the ends of these lines. (Solution by either pure or analytical geometry.)

15494. (A. R. Richardson.)—Three circles pass through a fixed point. It is required to draw three circles each of which touches the two others and also two of the given circles.

15495. (Rev. Prebendary Whitworth.)—Show geometrically that, if ABCD be a quadrilateral inscribed in a circle, and if AP, AQ, AR be perpendiculars from A on BC, CD, BD respectively, then

$$BC/AP+CD/AQ = BD/AR.$$

15496. (R. F. Davis, M.A.)—Prove that

$$\sin\theta = 2\sin\tfrac{1}{2}\theta-(2\sin\tfrac{1}{2}\theta\,2\sin\tfrac{1}{2}\theta\,2\sin\tfrac{1}{2}\theta)+(2\sin\tfrac{1}{2}\theta\ldots2\sin\tfrac{1}{3^2}\theta)-\ldots\text{ad. inf.}$$

15497. (S. C. Bagchi, B.A.)—A star σ_1 is on the meridian when the water in a lake begins to freeze. The meridian plane intersects the

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frozen surface in $A = z^2 - 2bxz - cx^2 = 0$, where $48(b^2+c)^2 = (1-c)^2$. The law of freezing is such that A remains unaltered, the axis Oz passes through σ, where σ is any star on the meridian and $O\sigma_n = \phi(z+n-1)$; the suffix of σ indicates the total number of stars that have culminated since the instant of freezing. If the light from σ return to it after two reflexions from the surface of the ice, show that the distance traversed by the ray is always $\phi(z)$, where $n[\phi(z)]^2 = (2\pi)^{n-1}$. The plane of incidence is supposed to be the meridian plane.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

9704. (Professor Neuberg.)—Les plans bissecteurs intérieurs des dièdres AB, AC, AD d'un tétraèdre ABCD se rencontrent sur le plan BCD au point A_1, sur la sphère circonscrite au point A_2. Soient $B_1, B_2, \ldots$ les points analogues relatifs aux sommets $B_1, \ldots$. Trouver les volumes des tétraèdres $A_1B_1C_1D_1$, $A_2B_2C_2D_2$.

10287. (W. J. C. Sharp, M.A.)—Prove that (1) the k-ary n-ic has an invariant of order k when n is even; and (2) of order $2k$ when n is odd; (3) it has a covariant of order k in the coefficients which is of order k in the variables when n is odd, and (4) of order $2k$ in the variables when n is even.

10321. (Professor Cesaro.)—Ayant posé

$$u_p = \frac{\sin 2nx \sin(2n-1)x \ldots \sin(2n-p+1)x}{\sin x \sin 2x \sin 3x \ldots \sin px},$$

on a $c_1 - c_2 + c_3 - c_4 + \ldots = -1 \cdot 9 \cdot 25 \ldots (2n-1)^2$ si c_p est le coefficient de x^{2n} dans le développement de u_p.

12846. (Professor Greenhill, M.A., F.R.S.)—Prove that, if

$$x^6 + 3x^4 - 8x^3 + 27x^2 + 24x + 25 = 0,$$

$2x^6 + x^5 - 10x^4 - 15x^3 - 5x^2 + 6x + 3 = 0$ may be so transformed that their solutions can be obtained as solutions of cubics (real or imaginary coefficients).

12865. (W. Booth.)—If a plane be drawn touching the sphere $x^2+y^2+z^2 = R^2$ along its intersection with $z^2 = a^2x^2 + b^2y^2$, prove that the equation of the developable so generated is obtained by equating to zero the discriminant of $x^2/(1-\lambda a^2) + y^2/(1-\lambda b^2) + z^2/(1+\lambda) - R^2 = 0$.

13138. (Professor Gregg.)—Show that the curve

$$x = 9a\sin\theta - 4a\sin^2\theta, \quad y = -3a\cos\theta + 4a\cos^2\theta$$

is symmetrical to the axes, and has double points and cusps; find the lengths of the arcs (1) between the double points, (2) between a double point and a cusp, and (3) the arc connecting two cusps and not passing through a double point.

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss Constance I. Marks, B.A., 10 Matheson Rd., West Kensington, W.

Vol. IV. (New Series) of the "Mathematical Reprint, is now ready, and may be had of the Publisher, Francis Hodgson, 89 *Farringdon Street, E.C. Price to Subscribers, 5s.; Non-Subscribers, 6s. 6d.*

THE LONDON MATHEMATICAL SOCIETY.

Thursday, December 10th, 1903.—Prof. H. Lamb, President, in the Chair.

The following were elected members:—Miss A. E. Bennett, Rev. M. F. Egan, Major Close, Messrs. W. H. Jackson, T. H. Havelock, H. Bateman, Z. U. Ahmad.

The President referred to the loss sustained by the Society by the death of Mr. G. H. Stuart.

The following papers were communicated:—

"Proof of a Formula in Elliptic Functions": Mr. R. G. Dallas.

"Modes of Convergence of an Infinite Series of Functions of a Real Variable": Dr. E. W. Hobson.

"Many-valued Newtonian Potentials": Prof. A. C. Dixon.

"A Generalization of Neumann's Expansion of an Arbitrary Function in a Series of Bessel's Functions": Rev. F. H. Jackson.

"On Normal and Anti-normal Piling": Prof. J. D. Everett.

"On the Distribution of Points of Uniform Convergence of a Series of Functions": Mr. W. H. Young.

"On Functions all of whose Singularities are Non-essential": Mr. P. E. B. Jourdain.

Lieut-Col. Allan Cunningham announced a property of Fermat's numbers.

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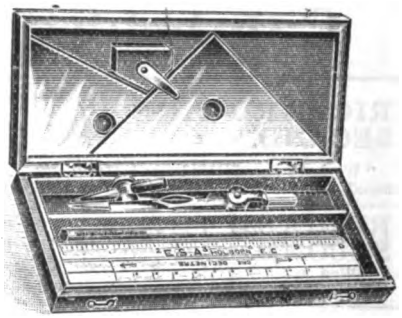

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Prel. Sci.	113
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B.A.	91
M.A....	18
Divinity	12
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I. Origin of speech—origin of writing—early writing roughly "phonetic"—the "historical" tendency in spelling—attempts to counteract it—the question of spelling reform in English—disadvantages of the conventional English and French spelling—general neglect of ear-training—current misconceptions—teachers of foreign languages must know the sound of the mother tongue—the organs of speech: the lungs—how to breathe—defective breathing.

II. The organs of speech: the throat—voiced and voiceless sounds—*h*—the mouth and the nose—vowels and consonants—tense and lax formation of sounds—standard speech—the alphabet of the Association phonétique internationale.

III. The vowel systems of English, French, and German, and their representation in the phonetic and the conventional spelling.

IV. The continuants and their representation.

V. Stops and nasals, and their representation. The speech of little children.

VI. Sounds in connected speech—*liaison*—strong and weak forms—dissimilation and assimilation.

VII. Length, force, and pitch—difficulties of English pronunciation—Northern English—"elocution"—the phonograph.

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Applications must be received by the CLERK OF THE BOARD, School Board Offices, Victoria Embankment, London, W.C., by or before the first post on Wednesday, February 10th, 1904.

Applicants who applied for the recently advertised vacancies for Assistants in the Board's Pupil Teachers' Schools can have the Form 40 P.T. they then submitted placed before the Committee on informing the CLERK OF THE BOARD by or before the first post on Wednesday, February 10th, 1904.

All communications on the subject of this notice should be marked outside "P.T. Schools."

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The Educational Times.

The Tenure of Assistant Masters.

THE question of tenure has often been discussed in these columns—impartially, we hope, and certainly with sympathy for both head and assistant masters—and it is therefore with great pleasure that we receive the *concordat* which has been ratified by both the I.A.H.M. and the A.M.A. in general meeting assembled. We learn that in both associations the agreement was only carried after prolonged discussion, and with dissentient minorities—clear proof that the plenipotentiaries upon either side, who drafted the terms under the chairmanship and with the assistance of Sir Edward Fry, have reached a compromise which represents "the common sense of most" and unduly favours neither party.

The question is beset with difficulties. On the one side the Head Masters, feeling intensely that responsibility for the welfare of their schools which the Endowed Schools Act endeavoured—and successfully—to fasten upon them, have hitherto held that the interference of any outside authority between them and their assistants would render their position impossible. The work an assistant master has to do is, they said, so individual and so little according to rule that a layman cannot estimate the fitness of a candidate, nor can he appreciate the reasons which may render it desirable to dispense with the services of a particular teacher. On the other side, the Assistant Masters contended that the interposition of the head master, with the sole power of appointment and dismissal, between them and the authorities of the school, deprived them of all standing ground and left them entirely dependent upon the honour of a single man.

Under the system of tenure prevailing at the present time in the vast majority of endowed schools, the head master may dismiss his assistant "at pleasure"—that is to say, for any reason or no reason—and, the requisite notice having been given, no appeal to the Courts is possible. It is upon this point that the first part of the compromise was arrived at. Dismissal in future, if and when the Board of Education embodies these resolutions in schemes under the Endowed Schools Act, is only to be "at discretion." A footnote explains this phrase to mean that the governing body of the school shall be able to inquire into the manner in which the discretion is exercised. Thus, when a head master who "has done that he should be sorry for" reports his action to his governors—which it is stipulated in the agreement he shall do "forthwith"—an opportunity is provided for a reconsideration of the case in a manner which will not necessitate the head master's resignation, even if, in deference to the opinion of his governors, he has to withdraw the notice.

A further gain to the assistant master is that he is declared to hold his office "from and under" the governing body, the head master acting merely as the agent of that body for the time being. This clause, if adopted, will at one stroke do away with the most fruitful cause of harsh dismissals. Many governing bodies are under the delusion that on the decease or departure of a head master his assistants can and ought to be called upon to perform *suttee;* and the "new broom," anxious for the proverbial "clean sweep," sometimes falls in with that opinion. Moreover, if we mistake not, this clause will prepare the way for material advantage hereafter. The Charity Commissioners have hitherto declined to allow foundation funds to be spent in pensions for assistant masters, because the latter have no legal existence under the schemes. That obstacle, at least, will be removed.

But the greatest concession which the assistant masters have won is on the subject of appeal against dismissal. This, it is agreed, shall lie to the Board of Education. It is very much to the credit of the Head Masters that, having decided to concede appeal, they went about to make it as real as possible. No pecuniary loss is to fall upon a successful appellant, and the Board's findings are to be binding and final. If reinstatement be ordered, the order will be obeyed. It is well that this should be so. Those who object that the head master will then have to go, must remember that "evil deeds sow evil seeds": there can be no health in the body politic if the wrong-doer is to be sheltered from the consequences of his action. But the fact that the course which has been followed is right did not make it any easier. In thus taking their lives in their hands the Head Masters have acted with a generosity which men of the world would probably call quixotic.

The next step must be made by the Board of Education,

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which, no doubt, is now considering these joint resolutions. Two years ago the request of the two associations that the Board would re-commit its tenure policy was curtly refused. But "autres temps, autres mœurs." Much has happened to the Board of Education since those days. The presence of some of its chief officials at the Conference which has resulted in these resolutions, is at least a guarantee that they will be considered on their merits. In our opinion "the mass of costly and litigious business" in which the Commissioners of 1895 predicted the Board would be involved as a result of a central appeal is not at all likely to be created. There will be very few appeals. The existence of the right of appeal will be sufficient to deter the head master who is inclined to abuse his position from proceeding to extremes. The alternative is professional ruin, which no man will lightly risk. And for the same reason a dismissed assistant will not take action on a frivolous pretext.

There can be no doubt that a settlement of this vexed question upon these or similar lines would go far to remove one of the prime causes of unrest among masters. "The system of dismissal at pleasure," said the representatives of the assistants before the Royal Commission, "is felt by assistant masters as the keenest disability under which they suffer." We need more and more in our schools men of originality, of character, and of ability. They are not too plentiful in any walk of life, and they are precisely the men to revolt against the state of utter subservience to which the present system of tenure reduces them. Men are lost to the profession in the beginning because of the wretched pittances with which they are expected to be content. This in itself is a serious matter; but far more serious is the steady drift outwards of those who have been successful teachers for five or ten or fifteen years, and who as they approach their second climacteric feel that they must at any cost breathe a freer, ampler air.

Whether or no the Board of Education takes the chance which this *concordat* offers, the conference and the resolutions will not have been in vain. In spite of the divergence of interest and the difference of status between the two associations, it has been possible to come to an amicable agreement upon such a burning question as this. The object lesson comes in the nick of time. If teaching is ever to take its proper place as an organized profession, we must compose our domestic quarrels and work in harmony to achieve that end. So may it be!

NOTES.

A special volume would be necessary to do justice to the numerous conferences of teachers briefly reported in our present number. The main trends of opinion, however, can be discerned from the general outline, and the "awakened consciousness" is deeply marked. If only some authoritative educational genius would co-ordinate the vast amount of current thinking and speaking on educational subjects, so as to bring matters to a point on a practical basis! Even if some outstanding opinion on each of the greater questions could be set up as a definite proposition on which arguments might converge! All this energy and enthusiasm can hardly be said to be running to waste so long as the profession is interested and the public is gradually familiarized with what is going on. But, comparatively speaking, and having regard to practical action, the waste seems portentous. Now that secondary education is taken in hand as matter of public care and administration, it is but natural that people should look for definite leading to the authorities. The urgency of the matter has long been sufficiently obvious.

Sir Oliver Lodge, in his address to the Teachers' Guild Conference, pointedly raised the question of "educational" as against "disciplinary" methods of instruction. The terms do not seem fortunate, but the meaning is sufficiently plain: "The act of learning is considered more important than that which is learnt; speaking generally, there is really no attempt made to awaken curiosity and hunger for knowledge." In so far as the appetite for further knowledge is not fostered, the question arises why this is so. Probably it will be found to be no lack of desire on the part of the teacher, but some practical impediments controlling his action—the impending examination confined to narrow limits and to specific aspects, or the restrictions of text-books and so forth. At the same time, the means of "discipline" are not to be despised; and then there is the question of harmonious adjustment. The issue appears to point to a larger freedom of the teacher, and therefore a higher qualification for such extended trust. Canon Bell, addressing the Head Masters, substantially argued in the same direction when he demanded more freedom for the teacher, "deliverance from the complex net-work of examinations and from other defects of the examination system," and increased grants for secondary schools. The current discussions bring into ever clearer relief the importance of the secondary schools as the backbone of the whole system.

Mr. Page, in his way-going address from the presidency of the Assistant Masters, said truly enough that "all educational problems resolved themselves ultimately into two clear ones —what to teach and how to get it taught." But these problems can be worked out practically only through the details, and then comes the rub. What to teach—"there is complexity and confusion where there ought to be order and simplicity." But the complexity is inevitable, and the confusion arises from the want of some authority to consider the facts timeously and with full representative competence, and then to adjust practice to the decision, so as to bring in "order and simplicity." Meantime we can but flounder on amidst conflicting and sometimes self-regarding opinion and action—or inaction. How to teach—here again there is expansive chaos in all departments; and the remedy is very far from being within sight. We will not adopt Mr. Page's bitter words about "professors who never stooped to performance, experts without experience, and administrators who had never been apprentices"; but they are far from being undeserved, and the facts they censure are not likely to be obscured. We are entirely with him in looking for the key to the problems in the character and capacity of the teacher, which again depends not a little on his pay, his

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tenure, and his encouragement. While the public views, right or wrong, instructed or uninstructed, selfish or unselfish, must be heard and taken into account, the essential matter is the teacher. So the teacher must combine and thrash out and formulate his views and raise his voice. Mr. Page shows a conspicuous example.

We have great pleasure in offering our very cordial congratulations to our able and genial contemporary the *Journal of Education* on the happy occasion of its "silver wedding." The form of commemoration, in the January number, was eminently fit, interesting, and useful—"miscuit utile dulci." The retrospect of the past quarter of a century in education, with a forecast of probable advance in the future, by a corps of prominent educationists headed by the Principal of the University of London, will be a document of permanent value in educational history. The achievement of presenting a round hundred pages—and such full pages—in a single number is surely unparalleled in the annals of the educational press. Perhaps none of the columns carried such keen interest as the "Editorial" prologue itself. Who shall say that education is a dry and uninteresting subject? We wish the *Journal* continued and increased success in the future, when its insight, independence, fair-mindedness, and verve will be more needed than ever and more valuable to the cause of genuine progress.

We desire also to congratulate the *School* heartily upon its first appearance in the arena. Mr. Murray has furnished it forth in sumptuous and attractive style, and Mr. Laurie Magnus has marshalled a distinguished band of coadjutors. The high aims previously announced are strenuously pursued in the first issue (January), and we hope they will be strenuously maintained. The motto—"To prepare us for complete living is the function which Education has to discharge"—comes from Herbert Spencer, who is commemorated (with fine portrait) by Sir Philip Magnus in the columns devoted to "Our Leaders." The general ethical purpose will be universally approved, perhaps more enthusiastically on the other side of the Atlantic than even on this side; and the determination to "subscribe to no party and to no denomination" maintains a free hand. "We hope," writes the editor, "to serve the country in educational affairs as the voice of its awakened consciousness." If we might change the article preceding "voice," so as to guard the rest of us from acquiescing in being reduced to silence, we hope so too. However, "solvitur ambulando"; and we cordially wish our youngest contemporary a strong and steady step, as well as a powerful and sustained voice.

The difficulties involved in the education of defective children press upon the administrators more and more urgently the more seriously they are tackled. "Besides feeding and physical exercise," said Sir J. Crichton Browne, at the International Congress for the Welfare and Protection of Children held in London some eighteen months back, "multifarious agencies operate on the child and help to make or mar its physical efficiency, and all these I would sum up under Mothering, Homing, and Schooling, which I name in the order of their importance." The development of popular instruction in first aid, home nursing, and hygiene, so actively and judiciously directed by Dr. R. J. Collie, the London School Board's Medical Superintendent for these subjects, must tend greatly to aid the beneficent agencies enumerated by Sir J. Crichton Browne. But, in the case of the various classes of defectives, it is increasingly felt that some specifically drastic measure is necessary. Dr. R. Reid Rentoul, of Liverpool, in a recent "Appeal to Asylum Managers and others" (see "First Glances, Miscellaneous"), points out that "our asylums and like places are practically manufactories for degenerates," and that "on January 1, 1903, 1 in 293 of the total population was a lunatic"—an officially notified lunatic. This is a frightful statistic, and the causes need to be carefully investigated. We wish Dr. Rentoul had produced definite statistics in support of the statement about the asylums. If his proposed revival of an ancient Scottish remedy be somewhat startling, at any rate there is a strong feeling in favour of a suggestion made by Dr. Martin W. Barr, of Pennsylvania, in a paper read at the International Congress of 1902, for "the permanent sequestration, under conditions dictated by science forbidding increase, of those adjudged unfit for the duties of parenthood and citizenship."

SUMMARY OF THE MONTH.

The Roman Catholic Hierarchy in Ireland is understood to have passed a resolution (January 12) approving of Lord Dunraven's suggestion for a solution of the Irish University question by the establishment of two endowed King's Colleges within Dublin University—one in Ulster for Presbyterians, and the other in Dublin for Roman Catholics—the colleges to be subject to the supervision of a Visiting Board appointed by the State. This scheme is practically the same as that submitted to Trinity College some time ago by Mr. Wyndham. The Bishop of Limerick, however, has laid stress on the difficulties to be encountered owing to differences of opinion amongst the members of the Government. Moreover, Lord Dunraven has put forward no definite or explicit proposal that may enable one to judge what prospect of success there is in his attempt to reconcile the conflicting views and interests of Trinity College and the Catholic Hierarchy.

Mr. John H. Cooke, Winsford, Cheshire, offers "a legal solution of the Passive Resistance problem." He proposes "that the Public Education Authority should not out of the rates pay, in the words of Subsection 2 of Section 14 of the Act of 1870, for the teaching of any 'religious catechism or religious formulary which is distinctive of any particular denomination'"; and "that such last-mentioned denomination should pay for such distinctive religious instruction out of private funds raised for that particular purpose." Construing together Section 5 of the Act of 1902 and Section 14 of the Act of 1870, he takes them to mean "that the Local Education Authority cannot in any school give, require, or pay for religious instruction which is distinctive in its character"; and this view he holds to be confirmed by Section 7, Subsections 1 and 6, of the Act of 1902. It follows also that, "so much of the salary of each teacher engaged in giving religious instruction is not 'an expense of the Council' within Section 18 of the Act of 1902." Hence, "it is not legal" to pay the *total* salary of each teacher in the non-provided schools, as the Education Committees have been doing.

The promoters of the new scheme for the higher education in connexion with University education of working men hope to have it in going order by autumn. A committee is to be established in Liverpool, and a conference will be held in Manchester in June, and another in Exeter in August, in connexion with the

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Cambridge University Summer Meeting. The movement is receiving support from many quarters, including co-operative societies and trade unions, for whose especial benefit it has been started. It is considered that co-operators and trade unionists are representative of the chief movements of democracy, and that, as such, they should be sufficiently educated to bear their legitimate burdens in municipal, national, and imperial affairs.

The memorandum on the new scheme for Army entrance examinations, issued from the War Office in November last, has been amended as follows:—The subjects covered by the qualifying certificate will be divided into two classes—Class I.: (1) English, (2) English History and Geography, (3) Mathematics (elementary). All candidates must qualify in each of the three subjects. Class II.: (1) Science, (2) French or German, (3) Latin or Greek. All candidates must qualify in two of the three subjects. No candidate may take out a "leaving certificate," or its equivalent, or pass the qualifying literary examination before the age of seventeen. The languages that may be taken up as voluntary subjects at the competitive examination for admission to the Royal Military Academy or the Royal Military College will be German or French and Latin or Greek.

The Secretary of State for War has approved a new scheme for the appointment of candidates from the Universities to commissions in the Regular forces. It has been framed by the Advisory Board on Military Education, who are strongly of opinion that a commission ought not to be granted until the University career has been completed by graduation, which will, therefore, be required in future; First Class Honours giving, under certain conditions, a year's seniority. The Board do not, however, consider that a candidate need defer until the taking of his degree the acquisition of such knowledge of military subjects or such practical military training as is essential before the grant of a commission; and they have found various University authorities fully prepared to co-operate with the War Office in providing, on their own part, means for the study of several branches of military science and history. The scheme will come into force in September, 1905.

The annual general meeting of the Royal Drawing Society was held at the Caxton Hall, Westminster, on January 11, Mr. Lionel Cust, M.V.O., F.S.A., presiding. Mr. T. R. Ablett, Art Director and Honorary Secretary, gave a very interesting lecture on the "Snap-shot Drawings" of the Guild of Illustrators, with lantern illustrations. A collection of such drawings, we understand, has been sent, together with an account of the system that produced them, to the French Minister of Fine Arts, at the suggestion of President Loubet. The Gold Stars offered by the Council of the Society to teachers were duly awarded, the competing works being exhibited.

The Women's Industrial Council held a Conference, at the Board Room of the London School Board (January 29), to consider the following resolution:—

That this Conference is impressed with the urgent need of providing training for girls of the industrial class in the care and management of children. That this training on broadly educational lines should take place at a day technical school, and continue for not less than a year. That this Conference earnestly recommends the Technical Education Board of London and all organizations dealing with technical training to consider the possibility of establishing suitable schools.

The resolution will be circulated to all the Education Authorities throughout the country.

The Datchelor Training College has had another successful year. Eight of the senior students have gained the Cambridge Teaching Diploma, and two the London Teaching Diploma.

The Rev. George Salmon, D.D., who has been Provost of Trinity College, Dublin, since 1888, died on January 22. He was distinguished alike as a mathematician and as a divine.

We record with regret the death of Lord Braybrooke, Master of Magdalene College, Cambridge (January 12).

IMPORTANT EDUCATIONAL CONFERENCES.

Joint Conference of Educational Associations.

A Joint Conference of Educational Associations was held in the City of London School on January 11, under the Presidency of the Rt. Hon. A. H. Dyke Acland. The associations participating were the Association of Assistant Masters, the Association of Assistant Mistresses, the Association of Head Masters, the Association of Head Mistresses, the Association of Head Masters of Preparatory Schools, the College of Preceptors, the Head Masters' Conference, the National Union of Teachers, the Private Schools' Association, and the Teachers' Guild of Great Britain and Ireland (with its allied societies, the Birmingham Teachers' Association and the Friends' Guild of Teachers). No resolutions were formulated or put, the idea being simply to have open discussion, with the object of forming public opinion and placing expert views before the Local Authorities on the questions discussed. Mr. J. H. Headlam started the question of the ages at which it is desirable that the transition from primary to secondary schools, and from one type of secondary school to another, should be made. If our secondary education is to be efficient, boys must enter, Mr. Headlam thought, at not later than ten years of age—how much earlier he left to speakers of more experience. Mrs. Dr. Bryant could not see how the children were to be got to come up at earlier ages. Mr. Rowe held that pupils should stay at least four years in elementary schools, and that the assistant master should have most to say as to what boys or girls should be promoted. Mrs. Bryant next opened a discussion on the question of the extent to which the curriculum in one type of school should be correlated with that in other types. The Rev. C. J. Smith, of Latymer Upper School, Hammersmith, was in favour of children at the elementary schools learning enough of English to enable them to fit in better with the work of the secondary schools. Mr. Storr considered it was a mistake to study foreign languages too early, and it was absurd for a child to begin Latin at an early age. A boy beginning his Latin at fourteen would in a couple of years catch up one who had been learning Latin at eight.

In the afternoon, Prof. J. W. Adamson spoke on the best method of discovering the child of scholarship form at the appropriate age of transition from primary to secondary schools. The problem was the discovery, at the immature age of eleven or twelve, of those finer brains in the public elementary school whose natural capacity it was to the interest of the community to cultivate by a prolonged schooling. Notwithstanding the successes at the Universities of boys and girls discovered by its means, the ordinary "paper examination" of large numbers of candidates entailed much waste. The present examination scheme would be more effective if it were less cut-and-dried, and if it included a liberal provision for *viva voce*. It would be still better if entrance were preceded by nomination. The examiners ought to have full discretion. Mr. W. Trevor H. Walsh (of the Kent Education Committee) held that the test must be one of character and intelligence, adapted to the tender age of the candidate, and of such a character as not to admit of cramming. In the first instance, all candidates should be recommended by the primary-school teachers, who should vouch for their ability, diligence, and general good character. Prof. Adams raised the question of the best method of adjusting the elementary pupil-teacher system to secondary schools, and, after some discussion, the Chairman said that in a large proportion of the country there was no adequate supply of secondary schools to take in anything like the number of intending pupil-teachers from twelve to sixteen or eighteen years of age, if we were to look forward to the time when, as he hoped, trained teachers would be sent into all our elementary schools. What, he thought, would be an ideal scheme where there was no adequate local supply either of secondary education or of intending pupil-teachers would be to have a pupil-teacher centre—not too large a one—where it could be arranged to have a secondary school of which the pupil-teacher centre should form an essential part. In the evening, members of the associations were, through the courtesy of the Skinners' Company, entertained at a *conversazione* in Skinners' Hall. Members had a welcome opportunity of inspecting an exhibition of educational books and apparatus, which was open also to members attending the Guild Conference on the two succeeding days.

Teachers' Guild Conference.

A General Conference convened by the Teachers' Guild of Great Britain and Ireland was held at the City of London School

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on January 12–13. At the opening meeting, Dr. S. H. Butcher, Chairman of the Council, presiding, there was a discussion of the relations of the new Education Committees with schools, especially private schools, and of the Register of Teachers. At the afternoon sitting on the same day Mr. A. H. Dyke Acland, President, in the chair, Sir Oliver Lodge, the new President, delivered his inaugural address. He said his remarks were directed to teachers, to the improvement of schools, and to the needed reforms in education itself. His main thesis was that reform was necessary in the schools of England, and not least in the great public schools. There was no other right and feasible reform of greater magnitude and urgency, as it was in the schools of England that our officials, administrators, rulers, future teachers, pastors, and masters were being yearly trained, and the effect of that training operated like the circulation on the human body. The reform he spoke of was, of course, an intellectual reform; and the fault he had to find with the schools was that the majority of the boys turned out of them were ignorant. They neither possessed knowledge nor did they know how to acquire it, and they had neither interest nor respect for it. They were not ashamed of their ignorance nor were they usually aware of it. The whole process of instruction should be overhauled, methods should be studied and organized and made efficient, and the work should be conducted by trained and enfranchised teachers under improved conditions. The broad features of the methods of instruction at the present time were that they were disciplinary instead of educational. The act of learning was considered more important than that which was learnt. Speaking generally, there was really no attempt made to awaken curiosity and hunger for knowledge. Whatever subjects were taught, for a long time they should be pursued up to a useful point. This was easily illustrated by a reference to modern languages. Of all school subjects which could most easily be brought to a useful point modern languages were foremost. They could be learnt at an early age, and immediately applied to practical ends. The study enabled one to sympathize with and understand foreign nations, and greatly contributed to a successful career. In this country modern languages were not practised for the sake of learning, but were largely utilized as a disciplinary and grammatical study. They were thus added to the burden of linguistic studies, and they gave no pleasure, assistance, or culture, and no practical result when the boys left school. He contended that, in spite of objections, there ought to be a smattering of a large number of things. The beginning of instruction should be properly conducted, as the incompetency of a teacher could make any subject repulsive. In teaching facts to the young the great aim ought to be, not discipline, but interest. In order that a child might make proper progress he should be under an individual teacher for more than a few terms. The child should be taught one subject thoroughly, but he was not prepared to say which. That must depend to some extent on the teacher and the pupil. He contended that human efficiency should be studied to the same end as the efficiency of a machine.

On the second day Mr. J. H. Yoxall, M.P., opened a discussion on the supply of teachers as affected by registration conditions. He contended that by improving the situation and conditions of the profession they would create incentives and attractions to the proper supply of teachers, so that, while a Teachers' Register on proper lines would prevent overcrowding and over-competition and all the public and professional evils which arose from that, it would develop conditions in the profession which would tend to make it more popular and draw to it a better supply of candidates and probationers. The supply of teachers as affected by tenure was discussed on a paper by Dr. W. H. D. Rouse (Perse School). He urged that the Board of Education should be constituted a court of appeal, and the security should be as great as was compatible with the public interests.

The Association of Head Masters.

The annual general meeting of the Incorporated Association of Head Masters was held in the Council Chamber of the Guildhall on January 12–13. On January 12 the Rev. Canon Bell, Principal of Queen's College, delivered the Presidential address. He said that year after year the Head Masters had had the discipline of patience while trying in vain to rouse the attention of the Government and the public to the need of reform in education. But now what a change of scene! What a bewildering variety of movements, meetings, conferences! Mr. Balfour's Education Act of 1902 had called into activity hundreds of bodies engaged with more or less energy and wisdom in effecting some of the reforms which the Head Masters so long and so patiently advocated. There was good reason to congratulate the Association, which, in the weary years of waiting, largely helped to form public opinion and to win acceptance for broad principles of reform. For instance, they might express satisfaction at the successful issue of their efforts in behalf of the tripartite organization of the Board of Education. A very happy outcome of this recent organization was the appointment of Mr. W. C. Fletcher as Senior Chief Inspector of Secondary Schools. They had good reason now to hope for better things than they had got from the late Science and Art Department, and the influence of the Senior Inspector and his staff would be steadily exerted to secure for secondary education many improvements still urgently needed. He would enumerate a few of them: (1) The schools needed freedom to give a well balanced liberal education, without being cramped by unscientific time-tables, or bribed to sacrifice their pupils' true interests. (2) They needed deliverance from the complex network of examinations, and from other defects of the examination system. They had to thank some of the Universities, headed by Oxford and London, which were rendering, or about to render, help in different ways. (3) No efforts must be spared by those interested in education to urge upon the intelligence and the conscience of the nation the pressing need of increased grants from the Exchequer to the Local Education Authorities, earmarked for secondary schools. The demands on them were growing rapidly. Schools could not live without a sufficient supply of well qualified teachers. Warnings had more than once been uttered from that chair that the supply of assistant masters had for some time been steadily dwindling both in number and in quality. There might be several reasons for this decline, but none was more obvious or more scandalous than the lamentably low standard of the salaries of a large proportion of assistant masters in secondary schools. There was one more question to which he must invite their attention—the pressing need of improvement in the teaching of our mother tongue. Complaints came from many quarters, including the Universities and the Army authorities, of the deplorable ignorance of English shown in examinations by candidates from their schools. Before our boys could be better taught, many schoolmasters would have to be converted from the heresy that English could be picked up anyhow without devoting time and care specially to it, and Universities and other training and examining bodies must be urged to lend their help in providing adequate tests and supplying competent teachers of the mother tongue. It was plain that the coming year was destined to exert a momentous influence on the higher education of the country.

The following resolutions, dealing with the Education Act of 1902 in relation to secondary schools, were among those discussed and adopted:—

That this Association welcomes the provision in the new regulations by which candidates for pupil-teacherships in elementary schools are recommended to receive some part of their education in secondary schools.

That this Association is cordially in sympathy with the recommendations laid down in Mr. Morant's memorandum, and is of opinion that the intending pupil-teachers should enter a secondary school at about twelve years of age, remain there for four years as an ordinary scholar, and then receive a two years' additional course as a pupil-teacher under special instruction and partial or continuous attendance.

That grants to secondary schools, whether from the Central or from the Local Authority, should be given in respect of the general work of the school, and not for special subjects, and that they should be considerably increased.

That all secondary schools provided or aided by the Local Education Authority should be administered by governing bodies under school schemes approved by the Board of Education.

On the motion of the Chairman a cordial vote of thanks was passed to Dr. R. P. Scott for his services as Honorary Secretary to the Association from its formation to the present time. Mr. G. W. Rundall, Registrar of the Teachers' Registration Council, stated that the actual number of teachers registered on December 31, 1903, was 4,500.

The Rev. C. G. Gull (Clapton), Chairman of the Committee on Military Training in Schools, mentioned that they had now the distinct recognition of military training in schools by the War Office. Eighty-four schools had been inspected by the War Office in addition to the seventy-four cadet corps established in schools. There had been a considerable improvement in, and extension of, rifle shooting in schools, 134 schools teaching

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shooting on Morris-tube ranges. He had received a letter from Lord Grenfell, commanding the Fourth Army Corps, stating that he had accepted the suggestion that he should appoint a special officer on his staff with the sole duty of inspecting military training in schools, and intimating that he had appointed to this position Colonel Elliott, who was for some years Secretary of the Lads' Drill Association.

Next day (January 13), after hearing a sermon by the Bishop of St. Albans at the Church of St. Lawrence Jewry, the Head Masters briskly discussed the tenure of assistant masters. Canon Bell moved the adoption of a series of resolutions, agreed upon at a conference between representatives of the Association and the Assistant Masters' Association. They were eventually approved *en bloc* by 49 votes to 17. (See our Leading Article.)

The President made a report on the conference between representatives of Oxford University, the Head Masters' Conference, and that Association with reference to the place of Greek in Oxford University examinations. It was stated at the conference that early in February the Council of the University would submit to Congregation resolutions to the effect that candidates for Honours in Science should be exempted from Greek in the Entrance Examination on condition of presenting an equivalent in science, and also one modern language, either French or German. A good standard of translation and composition, without any set books, would be demanded. Candidates for Honours in Mathematics would present some mathematical work and a modern language. Attention was drawn to the difference between these proposals and those suggested by the Head Masters' Conference in June, and it was answered that opinion in Oxford was not in favour of accepting a modern language test by itself as an equivalent for Greek. After some discussion, the Head Masters present expressed their approval of the Oxford proposals, and any one who was anxious to maintain the study of Greek would observe that, if these resolutions passed Congregation, Greek would really be the easier alternative. In the Scripture Examination the equivalent for Greek would be a fuller knowledge of the subject-matter. Several of the Head Masters strongly urged the necessity of an English test for all candidates at the Entrance Examination, and the Oxford members undertook to report this to the Council. Opinion in Oxford was much divided, and it was not possible to forecast the result of a division; but there was good hope that these very moderate proposals, the outcome of discussions which had lasted for thirty years, would win acceptance.

Mr. W. C. Fletcher, Senior Chief Inspector of Secondary Schools, gave an address on his experiences with the Mosely Commission on Education in America. He spoke of the supply of education in the United States—higher, secondary, and University—the salaries of the teachers, and the results of the work, suggesting, on the whole, cheerful views of English schools in comparison. Other subjects discussed were Co-education, Discipline of Boys, the Organization of Athletics, and Methods of Teaching Arithmetic.

Association of Assistant Masters.

The annual general meeting of the Incorporated Association of Assistant Masters in Secondary Schools was held (January 9) at Mercers' School, Holborn, Mr. G. F. Daniell (Mercers') presiding. Mr. T. E. Page (Charterhouse), the retiring Chairman, moved the adoption of the thirteenth annual report, which showed that the Association was prosperous. The increase of their numbers from 1,500 to 1,650 and the enrolment of 59 new members last month were encouraging facts, but, on the whole, they did not receive that measure of support from the large public schools which they certainly deserved. The condition of education at the present time afforded much ground for hope and some for fear—for hope, because of the increasing interest taken in the subject; for fear, because of a certain want of sturdy common sense in dealing with it. A close grip of facts was rare; yet all educational problems resolved themselves ultimately into two clear ones—what to teach and how to get it taught. With regard to the first, there was complexity and confusion where there ought to be order and simplicity. And how were they to get what was required properly taught? That was the real and central problem, and the key was to be found only in the character and capacity of those who did the work of teaching. If that work was to be well done by able men, there must be three things—better pay, happier terms of tenure, and wise encouragement of merit. The following resolutions were adopted:—

That this meeting welcomes the London Education Act, whereby the London County Council is constituted the sole Authority for all grades of education throughout the county, and trusts that provision will be made for the due representation of secondary teachers upon the Education Committee about to be established.

That this meeting reaffirms the following resolution passed by the Council on September 19, 1903, viz., "That, inasmuch as the I.A.A.M. is fully representative of the assistant masters in the secondary schools of London and is the only association so representative, in the opinion of this Council it should be allowed to recommend a member for election to the Education Committee for London about to be established."

That this meeting deprecates the establishment of higher elementary or secondary schools receiving rate aid in localities where there is already sufficient provision for secondary education, and urges the Education Department to use its powers to prevent such action.

That this meeting is of opinion that in school-leaving certificates the teacher should co-operate with the examiner, and his work should be formally recognized.

The Public-School Science Masters.

The annual meeting of the Association of Public-School Science Masters was held (January 16) at Westminster School, the President (Prof. W. A. Tilden, D.Sc., F.R.S.) in the Chair. The President said science masters had greater opportunities than almost anybody to make educational experiments. There was a great struggle going on among the medical faculty as regarded the position of chemistry necessary in the education of the medical student, and an attempt was being made to stifle a large part of it and to thrust it out of the curriculum. A medical man ought to have a sufficient equipment in chemical knowledge, and the inevitable solution was that every medical student would have to show that he had already learned physics and chemistry before he entered the medical school. Sufficient time, moreover, was not allowed the engineer to enable him to get the necessary equipment. He thought the future of science teaching in this country was looking brighter.

Mr. M. D. Hill said that the scheme they had put forward for the Woolwich and Sandhurst examinations had now been accepted by the majority of the colleges at Cambridge. The science part of the examination would now be as follows:—"Papers and practical work in not more than six subjects—(1) physics, (2) chemistry, (3) geology, (4) the natural history of plants, (5) zoology, (6) the elements of botany and zoology; it being understood that no candidate may take the subject (6) if he take either of the subjects (4) or (5). Of these six subjects candidates must not offer more than two. All candidates will be required to take an elementary paper in chemistry and physics, but those who take the subjects (1) or (2) will be excused the corresponding part or parts of the elementary paper. Candidates who take subject (1) will be required to take an elementary paper in mathematics."

Papers were read by Mr. R. E. Thwaites, Malvern, on "The Possibility of Fusing the Mathematical and Science Teaching of Public Schools," and by Mr. O. H. Latter (Charterhouse) on "Nature Study." Resolutions were passed requesting the Committee (1) "to consider the subject of the certificate examinations of the Oxford and Cambridge Schools Examination Board in the course of the coming year, and, if the state of opinion in the Association be found to warrant it, to approach the Board on the subject"; and (2) "to appoint a sub-committee to communicate with the Preparatory Schools' Association with a view of determining the form of science teaching best suited to preparatory schools."

Technical Education Conference.

A Conference of Teachers, convened by the L.C.C. Technical Education Board, was held on January 7 and 8, at the South-Western Polytechnic, Chelsea, under the presidency of Mr. A. J. Shepheard, Chairman of the Board. There was a large attendance of teachers from elementary and secondary schools and technical institutes. The arrangements for the first day were made in conjunction with the Geographical Association, which had collected maps, globes, slides, and apparatus illustrative of practical methods of teaching geography. There was also an important Art exhibition, including a loan collection of fifteenth- and sixteenth-century herbals and finely illustrated botanical works, together with a number of plant drawings by Ruskin and his pupils. There were also framed examples of reproductions of textiles and other work; and the chemical, physical, and mechanical laboratories of the Polytechnic were open.

The Chairman, who had been to America on the Mosely Commission, spoke of the higher public spirit of American education,

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its keenness for practical utility, and notably for manual work. His study of it had convinced him that we have a great deal of leeway to make up in the matter of practical education. Mr. Mackinder gave an address on the Development of Geography Teaching out of Nature Study, urging his hearers to abolish from the junior schools all maps, which were the very bane of geographical success, and not to take out the globe, but to point to the great realities of Nature. At the afternoon sitting, Sir John Cockburn in the Chair, papers were read by Mr. P. F. Kendall (Yorkshire College), Mr. J. Lomas (Liverpool), Dr. A. J. Herbertson (Oxford), and Mr. T. Alford Smith (St. Dunstan's College, Catford) on various aspects of geographical teaching.

The proceedings of the second day had been arranged by the Board in conjunction with the Modern Language Association, and modern language teaching was the main subject. The Hon. W. Napier Bruce, who presided at the morning sitting, spoke at length on Old and New Methods and Results; and addresses were delivered by Mr. E. R. Edwards on the Application of Phonetics to Language Teaching, and by Mr. F. B. Kirkman on the Method of using a French Reader. Mr. A. F. Leach, who opened a brief discussion, hoped that the new method would be applied to classics also. At the afternoon sitting, Dr. Heath, who presided, said that, if a large group of schools in the future would know nothing of Greek and little of Latin, the secondary-school boy would have to look for the highest side of his intellectual training to the teachers of English, French, German, and the other spoken languages of the West. Mr. G. G. Coulton spoke on Grammar Teaching, and Prof. Rippmann on Examinations in Modern Languages.

North of England Education Conference.

The second Annual Education Conference of "persons concerned in Primary, Secondary (including Technical), and Higher Education" in the North of England was held at the Yorkshire College, Leeds, on January 8–9. Principal Bodington presided. On the first day, the Training of Teachers was handled in three papers by Prof. Findlay, Mr. A. C. Price (Leeds Grammar School), and Mr. A. J. Arnold (Sheffield Pupil-Teachers' Centre). Prof. Findlay said the existing training colleges—day and residential—should conform to one of three types: (1) those incorporated in Universities should no longer be permitted to retain students who cannot matriculate before entrance; (2) the bulk of the existing colleges should only aim at University degrees by the process of affiliation; (3) some of those established only for women teachers should specialize for infant and lower standard work. Much discussion followed, in the course of which Miss Hale, Principal of Edge Hill Training College, Liverpool, objected to the differentiation of training colleges advocated by Prof. Findlay. "I am sure," she said, "that men would be all the better teachers if they had to pass some time in an infant school. They would receive some training in patience, and have an opportunity of studying the child mind." In the afternoon, Canon Lyttelton led a discussion on the teaching of English, and Prof. Ramsay (Glasgow) discoursed on the methods and aims of classical study. At the Pupil-Teachers' College, art teaching was vigorously discussed, especially in application to manufactures.

The second day was marked by an address from Prof. Sadler on Educational Needs. As to present opportunities and possibilities, he said:

> For what is at present amiss the best remedy will come through the spirit of mutual good will, through the attitude of mind which thinks of national education as the one thing interrelated in all its parts. Nothing helps us so vividly to realize the need for unity of spirit in national education as friendly intercourse between those engaged in different departments of its common work. The practical changes for which such intercourse naturally prepares the way can now be carried out by Local Authorities charged with wide powers over elementary and higher education alike. But nothing short of a strong wave of national enthusiasm for the work of educating the nation's children will ever suffice to sweep away the obstructions which set habit and long neglect and mistaken parsimony still too often allow to choke the channels of passage from one type of school to another. Nor will it be possible to secure the intellectual and social and sound co-ordination of our varied types of schools, or to readjust school curricula and methods of teaching to the new intellectual outlook of the time, unless the prospects of the teaching profession are such as to draw into the service of the schools a steady and sufficient stream of men and women convinced in their hearts that the future welfare of England depends in no small measure on the welfare of her schools, and combining intellectual power with enthusiasm for their task, perseverance, and devotion to the interests of the pupils committed to their charge.

Mr. Harry Coward, F.E.I.S., President of the N.U.T., fresh from the Mosely Commission expedition, read a paper on the Co-ordination of Schools, followed by papers from the Rev. W. H. Keeling (Bradford Grammar School), and Dr. Forsyth (Leeds). Dr. Forsyth summed up the practical needs thus:

> (1) Sufficient funds to raise and to keep up the highest standard of efficiency, not only on the ordinary recognized educational lines, but in experimental testing of new methods. (2) Public sympathy with every form of educational effort—not merely of the spasmodic nature accompanying the discussion of new Education Acts, but a persistent high estimate of the value of education as an important feature of national life. (3) The ideal that education is an organic whole, not an aggregate of separate systems, but one and indivisible—aiming at that general culture which imparts breadth of view and moulds character, and also at that individual consideration of preparatory training for the battle of life. Then, when schools had done their best and shown their best, co-ordination would become the great educational question of the near future.

Commercial Education, Music, and Modern Languages were also subjects of prolonged and earnest discussion.

Directors and Secretaries for Education.

At the annual meeting of the Association of Directors and Secretaries for Education, held at Spring Gardens on January 7, Mr. Percy Elford (Oxfordshire), the Chairman, said many boroughs and counties were finding that all their energies were being devoted to elementary education, and when they had got the elementary schools into good working order, and had arranged for the supply of teachers, practically the whole of the money available for higher education would be absorbed, and there would not be enough for the maintenance in a state of high efficiency of the secondary schools, technical institutes, and the like. Under these circumstances it behoved them, as the educational experts whom the Local Authorities would consult, to consider the matter very carefully. There was a very great need for introducing into the teaching staff of elementary schools a number of teachers, both male and female, who had gone through a wider course of education. There was only one source from which that class of teacher could be drawn, viz., our secondary schools and institutions: but only a few of them were in a position to supply those teachers; so that, to produce the number of teachers required for the elementary schools, besides maintaining or assisting the present training colleges and teachers' centres, the Local Education Authorities must see to the proper equipment and staffing of these secondary schools. To provide sufficient inducement for the best men and women to take up the teaching profession would cost more than the Local Authorities could possibly afford. If the training of teachers, which should be paid for from Imperial, and not local, sources, was to be thrown upon the Local Authorities, they would be absolutely crippled in their endeavours to supply or aid the supply of education other than elementary. It was their duty as Education Secretaries and Directors to insist on higher education being adequately supported and aided.

National Federation of Head Teachers.

The Seventh Annual Conference of the National Federation of Head Teachers' Associations was held (January 5) at the Teachers' College, Sheffield. There was a large attendance of delegates. Mr. T. Thorpe, of Leicester, the new President, said that education was inseparably bound up with the prosperity of our manufacturing pursuits and our various industrial interests, and year by year was more and more essential to their maintenance. For the commercial and industrial advantage of the State there must be no limit set to any child's educational advancement. The great changes designed to take place in the administration of our educational system by the Act of 1902 were slowly being accomplished. The work of co-ordination was no light or easy task, on account of the numerous interests involved. But no interests should be permitted to override the one main consideration, that the interests of the child were paramount. As head teachers they all welcomed with unalloyed satisfaction the recent issue of special regulations affecting the training of teachers, though much they should like to have seen was not even attempted. A perusal of the new regulations and the remarkable prefatory memorandum which accompanied them would convince all that at last the training of the teacher was to be taken in hand seriously and on thoroughly educational lines. Speaking of the shortage of teachers, the President contended

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that the profession offered few inducements to suitable candidates to go in and remain in. The situation was undoubtedly serious for the schools, but the solution was a simple one and purely a matter of business. An adequate supply of candidates would soon be forthcoming if the ultimate salaries to be obtained were sufficient and the wear and tear were reduced by better conditions of service.

University Women Teachers.

The annual meeting of the Association of University Women Teachers was held (January 16) at Bedford College, London. The number of ordinary members was reported to be 1,291, and of life members to be 95. Miss Maitland, Principal of Somerville College, in her presidential address, urged the need for more women on the Local Education Committees, and the importance of impressing more deeply upon public bodies generally the views of women teachers of University experience.

Assistant Mistresses in Secondary Schools.

The twentieth annual meeting of the Association of Assistant Mistresses in Public Secondary Schools was held at Notting Hill High School on January 12. Miss Laurie (Cheltenham Ladies' College), President, in the chair. Miss Laurie dealt chiefly with the Education Act of 1902 and its effect on secondary education. The other main subjects of discussion were the conditions of tenure, the overcrowding of the time-table, and specialization.

The Private Schools' Association.

At the annual meeting of the Private Schools' Association, held at the College of Preceptors (January 13), Dr. Sibly, of Wycliffe College, Stonehouse, the President, said this and the following year would determine the future of private schools' interests. They had to guard against unintentional harm. The Government, while protesting against foreigners dumping goods on the country, was dumping education—by underselling them in the market of education. They were actually destroying one of the great "industries" of the country. The danger was lest all education should drift into the hands of the State; and ruin would be the result if this came about. In conclusion, he protested strongly against the Government sacrificing the livelihood of tens of thousands of people. The State had recognized not only corporeal property, but uncorporeal property; and half of the education of this country was done by private schools.

The Friends' Guild of Teachers.

The annual conference of the Friends' Guild of Teachers was held at Saffron Walden School on January 5–7. The Presidential address of Susanna E. Wells (summarized in the January issue of the *British Friend*) dealt with "The Educational Problem of the Society of Friends," with special reference to anticipated measures of reorganization. Among other matters of discussion was the problem of "Co-education," which was introduced by the Rev. Cecil Grant, of Keswick, in an earnest address treating education as a religious question and urging the helpfulness of co-education. The feeling seemed to be against the introduction of the system in the upper-grade schools, from motives of economy, before experiment warrants it on educational and on moral grounds. The Society has recently constituted a Committee of Education, and appointed its two secretaries as educational officers, with a view to active developments in its own sphere.

UNIVERSITIES.

(From our own Correspondent.)

Oxford.

The frost and east wind which greeted our return to Oxford somewhat damped our enthusiasms, but the Greek and anti-Greek meetings were speedily convened by the more energetic. At the moment of writing the sturdiest Greek seems to be overwhelmed by gloomy forebodings and to anticipate defeat here and then capitulation also by Cambridge. He reasons as follows:—On the last occasion the majority for Greek was not very great; since that time a kind of "cave" has been formed of those who, while professedly champions of Greek and believing in its holding its own among those who seek for a general education, seem ready to exclude from its influence the professed specialist in science or mathematics. On the former occasion these voted with the Greeks; now from the wording of the new scheme they will be folded with the anti-Greeks when it comes to the question of a vote Aye or No.

It must be confessed that the mere philosophic onlooker cannot understand why Oxford is so terribly anxious to spread her net wider to include those who could and do get a good science training on their own lines in the newer Universities. It is hardly a commercial question: the colleges are still well supplied with men, and most of them can still pick and choose at matriculation. The University does, indeed, proclaim itself to be hard up, but, as a matter of fact, the condition of things has to no small degree been brought about by the demands of Natural Science for buildings and plant and teachers. The cost to the University of the science students is very considerably in excess of that of the larger majority of other students, and, except colleges build more new buildings, we cannot increase the former to any very appreciable extent without diminishing the latter. Moreover, we believe that the quality of the science men we turn out under the present circumstances compares favourably with the standard achieved by the "technical" establishments. Why should we not then stick to our standard instead of descending into the arena as competitors with these establishments?

The mention of science suggests the fact that there is a "very pretty" quarrel going on just now over the Regius Professorship of Medicine, lately resigned by Sir John Burdon-Sanderson. The post is not a very well paid one—worth, perhaps, some £500 a year—but it is a position of considerable importance in the world of medicine, and it could and can be held simultaneously with a private practice. Certainly Sir Henry Acland in his day had a wide practice, and indeed it was said that it was not respectable to die without at least calling him in.

Apparently some of the science professors, thinking that a good outside man would not be enticed to Oxford by the income of the Professorship, decided that it would be better to give the post to one of their existing teachers—in fact, to the Reader in Pathology.

The Vice-Chancellor was approached and then Mr. Balfour, and everything seemed *en train*, when the news spread from Oxford to London. Then the Oxford medical men considered that the plan was an unworthy one, bearing in mind the position of the professorship, and that there were Oxford men of sufficient note in the medical world worthy to be considered in competition with one who is, after all, an Edinburgh man, and only a recent importation into Oxford. They held a meeting and memorialized Mr. Balfour. So, we believe, the matter stands now.

We confess that we do carry our "free trade" principles to an extreme limit, for we seem to put an embargo on our own productions. In the appointment to the Corpus Professorship of Jurisprudence we went further still by excluding British-born and calling in a Russian. No doubt the new Professor is a distinguished man, and circumstances have conspired to bring his name before the public, but certainly the English School of Jurisprudence is of sufficient reputation to be able to provide a teacher for an English University.

We are consumed with curiosity to know what Pusey House will do with its recent large legacy. It seems as if the legacy might have been better directed and yet have served its purpose. Pusey House is not a great teaching establishment; excluding its librarians, there cannot be more than one or two students. If the scheme was to benefit the High Church party, a legacy to Keble College would have been much more effective.

At the moment of writing term has only just commenced, and therefore, it is rather hard to chronicle movements and factions before they have had time to develop.

Before the next number appears we shall have played Cambridge both at Association football and at hockey. The former match we seem likely to lose, but, after the experience of the Rugby match, the Cantabs cannot feel too confident.

The 'Varsity eight is in process of formation: the President, Monier-Williams, is not stroking this year; at any rate, at present Graham occupies that position. The crew is not without promise, and is certainly physically strong. A great many torpids are shivering up and down.

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(From our own Correspondent.)

Cambridge.

THE term has indeed opened in gloom. Hardly had the residents begun to return when universal sadness was caused by the news of the death of Lord Braybrooke, Master of Magdalene. For more than fifty years successive generations of University men have experienced the unfailing kindness, the keen sympathy, and the gentle courtesy of a man who, it is no mere form of words to say, was universally beloved and as universally respected. The outside world, from the King to the labouring man, have testified their affection for the late Master, and those of us who here have had the privilege of close association in academic work know that the University has lost one of the most memorable of her sons.

The succession to the Mastership, as is generally known, is in the disposal of the new Lord Braybrooke, who, if he does not himself assume the duties of the position, as many hope he will do, may be trusted to select one who will emulate and profit by the great example of the blameless life which has passed away.

Another sad event has occurred in the death of Mr. G. S. Budgett, of Trinity, one of our most rising biologists. Elected to a Balfour Studentship, he engaged in research work which led him to Nigeria, where, in the course of his scientific investigations, he was struck down by malarial fever, and, though he was able to return to Cambridge, it was only to die. He will be sincerely mourned by a large circle of friends, and especially by the men of the mounted section of the University Volunteers, whose lieutenant he was.

The Engineering School has sustained another serious loss. Prof. Ewing, during his brilliant tenure of office, was peculiarly successful in attracting to his school men of the greatest capacity; the Government found out the Professor's merits, and took him away from us to the national gain, but to our loss. Now one of the most rising of the assistants in the school has been selected for the important work of supervising technical education in New Zealand. Mr. W. S. Latrobe, after a career of unusual distinction as a student and teacher, leaves us at the end of this term for his new post. Doubtless some University will before very long realize that it would be wise to ask him to return, as engineers of his calibre are not to be found at a moment's notice.

The new arrangements under which University candidates are to enter the Army have been made known to the world through the medium of the Press. The late Secretary for War stated most distinctly that it was desired to encourage University men to enter the Army, and also that the existing regulations as to age and examinations put such candidates at a disadvantage in regard to seniority, as they entered the service practically three years later than those who went in *viâ* Sandhurst. To obviate this inconvenience he sketched a plan by which the evil was to be avoided. Put quite briefly, the plan was to select the candidates during their University career, and allow for seniority the time passed between such selection and actual entry into the Army: in other words, time spent at the Universities under specified educational conditions would count as Army service. This seemed practicable and reasonable.

The new scheme carries out Mr. Brodrick's views in a peculiar way. All candidates must first graduate, and afterwards pass a qualifying military examination, actual selection among the candidates being made by a Board of Electors. An excellent plan, but the evil to which Mr. Brodrick alluded is intensified; for, under the old regulations, one year's residence only was required, while three will be requisite under the new scheme. It is true that a sop is thrown to the First Class Tripos man, who is graciously given a year's seniority as a reward for being a good boy. It would be interesting to discover how many First Class Honour men have entered the Army by examination during the past ten years—possibly two or three, certainly not half a dozen. Except on this one point, the scheme will produce excellent results; but, as long as age limits for rank exist, no man without private means would care to face the risk of entering the service in peace time, with a likelihood of being cast adrift upon the world with a meagre pittance at an age when a new start is impossible. The difficulty could be arranged in a five minutes' chat with the Secretary of State; but the tortuous mazes of the War Office cannot be threaded by the mere civilian.

A very sensible alteration is to be made in the General Examination. At present, Algebra is a subject in the "Little-go," and also in the following examination: it is proposed to do away with it in the General, and to substitute Dynamics. In spite of criticisms in certain quarters, there is little doubt that our poll examinations are now on a sound basis and are sensibly conducted by the responsible authorities. When an examination in military subjects has been added to the list of specials, as undoubtedly would be wise in order to carry out effectively the new War Office scheme, the whole of our examination system may be able to stand without alteration for a few years at least.

London.

IN the projected Institute of Medical Sciences it is proposed that accommodation adequate for 500 students should be provided in connexion with the teaching of anatomy, physiology (including pharmacology), biology (zoology and botany), chemistry, and physics. The cost of building and annual expenditure on staff and service are estimated as follows:

	Cost of Building.	Annual Expenditure on Staff and Service.
Anatomy	£50,000	£5,500
Physiology (including Pharmacology).	50,000	7,000
Biology (Zoology and Botany)	25,000	2,700
Chemistry }	35,000	{ 2,600
Physics }		{ 1,700

Representatives of the London hospitals have addressed a letter to the Chancellor of the University (Lord Rosebery) expressing satisfaction that an appeal has been issued for funds to build and endow an institute of medical sciences under the control of the University, and declaring their conviction that the concentration of the teaching of the preliminary subjects of the medical curriculum under the University has become a matter of urgent necessity in the interests alike of medical education, of the hospitals, and of the medical schools.

The inaugural meeting of the Central Association of University Students was held at the University (January 6), Dr. R. D. Roberts, Registrar of the University, in the chair. Dr. Roberts thought the founding of the Association was a very important step in the development of University Extension work, and explained the recently adopted scheme of study for a new and more advanced certificate.

Progress is being made with the housing of the Library. At a meeting of Convocation (January 18) a resolution was adopted expressing satisfaction with arrangements in process of execution, deprecating any further dispersal of the books, and urging early provision of adequate accommodation; and it was stated that the Senate was likely to agree to a recommendation that the Library should be catalogued and proper shelves provided at the cost of the University.

The Foxwell Library was reported as fairly on the way to be settled in the University; and Convocation passed a vote of thanks to the Goldsmiths' Company for their generosity thereanent.

The Senate has resolved that the fees of candidates who withdraw from any examination before the last day of entry for that examination be returned to them; that candidates who do not present themselves for an examination be allowed to enter when that examination is next held on payment of half the ordinary fee; and that no remission of fees be made to candidates who withdraw after presenting themselves for examination.

Birmingham.

THE report of the Principal to the Council states that the total number of undergraduates on the register at the end of the session 1902-1903 was 221, distributed as follows:—Science, 69; Arts, 57; Commerce, 6; Medicine, 89—total, 221; as against 191 in 1901-2. The number of students other than undergraduates was 586, as against 475 in 1901-2. On the subject of education, the report states that Prof. Hughes is vigorously taking up his organizing work. The temporary Chair of History has been very successful, but the School of Modern Languages has not yet attracted the attention that was expected. The Principal reports an increase in the number of students for the present session in all departments, though chiefly (as was to be expected) in the subjects of engineering and chemistry. He believes that a scheme for residential hostels for men and for women students respectively is now becoming urgent, and that many of the Local Education Authorities in the district would be willing to co-operate and give financial aid for a residential hostel. The new Department of Mining began work at the opening of last session and was attended by ten students. Another subject that the Principal is anxious that the University should add to its list is agriculture, especially as regards development on its biological side.

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Manchester. In the Department of Education Prof. Sadler will continue his lectures on American and English Education on Wednesday evenings and Saturday mornings during the month, the Saturday class being open to discussions. From January to June, Mr. H. Thiselton Mark will lecture on the History of Education; and briefer courses on Curricula of various Types of Schools by Miss Catherine Dodd, by Miss Burstall (Head Mistress of the Manchester High School for Girls), and by Mr. J. L. Paton (High Master of the Manchester Grammar School), will be given from time to time.

Wales. The Swansea Technical College having applied for recognition as a college in which students might pursue courses of study for degrees of the University of Wales in science, pure and applied, the Court (January 22) unanimously resolved that the appeal could be best met "by an extension of the charter that will give the University power to admit to certain privileges any institution possessing adequate facilities in point of equipment and staff for the teaching covering the whole course of work for an initial degree in any faculty, these privileges being at least those of presenting candidates for degrees in that faculty under Article 14 of the charter." The Standing Executive Committee were requested to draft a supplementary charter for presentation to the Privy Council and to arrange for a visitation to the Swansea College by outside experts to report to the Court on its position and equipment.

Edinburgh. The annual report shows that during the past year the total number of matriculated students (including 300 women) was 2,990 — the highest number reached for ten years. Of this number 873 (including 263 women) were enrolled in the Faculty of Arts, 238 (including 6 women) in the Faculty of Science, 50 in the Faculty of Divinity, 352 in the Faculty of Law, 1,451 (including 14 women) in the Faculty of Medicine, and 26 (including 17 women) in the Faculty of Music. Of the students of medicine 677, or over 46 per cent., belonged to Scotland; 333, or nearly 23 per cent., were from England and Wales; 118 from Ireland; 72 from India; 232, or about 16 per cent., from British colonies; and 19 from foreign countries. The number of women attending extra-academical lectures, with a view to graduation in Medicine in the University, was 101.

Although the Carnegie Foundation has not as yet had an appreciable influence in increasing the aggregate of students, the number of those availing themselves of the section of the scheme that provides for payment of class fees has during 1903 been higher than formerly, and it is noticeable that many of these students take out a larger number of classes than they would probably otherwise have done.

As the allocation made to the University from the Carnegie Trust is inadequate to satisfy all its present requirements, an appeal is being made to the public for subscriptions to a fund "for the further development and extension of the University in the direction more especially of a proper provision for the erection and maintenance of laboratories for physics and engineering, for a more extended training in modern languages and the subjects of commercial education, for facilities for research, for improved tutorial instruction, and for the Library."

Glasgow. According to the annual report for 1903 the number of matriculated men students was 1,798, and, of these, 103 were for the summer session; and the number of matriculated women students was 360, of whom 24 attended the summer session. There were thus in all 2,158 students during the year. The students matriculated in the Arts Faculty numbered 949; in Medicine, 726; Science, 213; Law, 190; and Theology, 57.

Queen's College, Galway. The annual report shows 118 students (as against 93 in 1901–02)—the largest number during the last twenty years, with the exception of 1889–90 and 1893–94, when the numbers were 122 and 120 respectively. Of these 118 students, 57, or almost one-half, came from the province of Connaught and 33 from the province of Ulster, showing that the allegation that most of the students come from Ulster is unfounded. Of a total of 47 scholarships awarded, 26 were gained by students from the counties of Galway, Roscommon, Longford, and Clare, 17 being awarded to students from the county of Galway alone.

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CURRENT EVENTS.

Fixtures.

A Course of Twelve Lectures on "The Psychological and Logical Foundations of Intellectual Education," by W. E. Johnson, M.A., Sidgwick Lecturer in Moral Science in the University of Cambridge, will commence at the College of Preceptors, on Thursday, February 25. The Lectures will be given on successive Thursday evenings.

* * *

The remaining four Lectures of Prof. Rippmann's Course on Elementary Phonetics for Teachers of English, French, and German will be delivered at the College of Preceptors, on February 12 and 26, and March 11 and 25.

* * *

The next Evening Meeting of the Members of the College of Preceptors will take place on Saturday, February 20, at 5 p.m., when Prof. J. W. Adamson, B.A., will read a paper on "The Teaching of the Mother Tongue."

* * *

Mme. de Pontevedra will address the Société nationale des Professeurs de Français en Angleterre at the College of Preceptors on February 27, at 4 p.m., on "Quelques Contemporains."

* * *

The Rev. Dr. E. Moore will deliver the Barlow Lectures, on Dante's "Paradiso," at University College, London, on February 10, 11, 17, 18, 24, and 25, at 3 p.m. Open.

* * *

Prof. J. G. Robertson, M.A., B.Sc., Ph.D., will continue his course on Schiller's Life and Work, at King's College, London, on Thursdays at 4.30 p.m., ending on March 24. Tickets (5s. for whole course) from the Secretary, King's College, W.C.

* * *

The Rev. Septimus Buss, LL.B., will lecture on subjects bearing on the Education Acts at the church of St. Anne and St. Agnes (Gresham Street) on Wednesdays during February at 1.15 p.m.

* * *

Under the auspices of the L.C.C. Technical Education Board courses of ten lectures, free to teachers, will be given (1) on "The Natural History of Plants," by Prof. Geddes, of University College, Dundee (St. Andrews University), and (2) on "The Natural History of Man," by Alfred C Haddon, M.A., D.Sc., F.R.S., University Lecturer in Ethnology, Cambridge, at the Horniman Museum, on Saturdays, at 11.30 a.m., from now on to May. Tickets from the Clerk of the L.C.C., Spring Gardens, S.W.

* * *

Names of candidates for the L.C.C. Intermediate County Scholarships (70 "ordinary" and 20 "commercial") must be sent to the Secretary of the Technical Education Board (upon forms to be obtained at the Board's office, 116 St. Martin's Lane, W.C.) by April 30. Examination begins June 2.

Names of candidates for the L.C.C. Horticultural Scholarship (£60, open to young women of sixteen to twenty, tenable at Swanley Horticultural College, and renewable for a second year) must also be sent (on special forms, as above) by April 30.

Names of candidates for the L.C.C. Shoreditch Technical

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Institute Scholarships (25, providing free instruction at the day school attached to the Institute, with maintenance grant of £10, £15, or £20, and open to boys not under thirteen on September 1), to be awarded in July, must be sent (on special forms, as above) by April 30.

Candidates for the L.C.C. Evening Exhibitions in Science and Technology (200, value £5 a year), to be awarded in June, must apply (on special forms, as above) by February 29.

Applications for the L.C.C. Senior Scholarships (5, value £60 a year for three years, in addition to payment of college fees up to £30 a year) and Senior Exhibitions ("a certain number"), to be awarded in July; for the L.C.C. Junior Scholarships in Practical Gardening (7, providing free instruction at the Royal Botanic Society's Gardens, with maintenance grant of £20–£25, open to boys of fourteen to sixteen), to be awarded in July; for the L.C.C. Scholarships for Blind and Deaf Boys and Girls (6, free instruction, with maintenance grant of £10 or £20, age fourteen to seventeen on June 1); for the L.C.C. Scholarships for Crippled Boys (6, same conditions); and for the L.C.C. Scholarships for Crippled Girls (6, same conditions) must all be made by May 14, on forms to be obtained from the Secretary of the Technical Education Board, 116 St. Martin's Lane, W.C.

* * *

THE Board of Education, in co-operation with the Council of the Society of Arts, intend, during the present year, to hold, in the Victoria and Albert Museum, South Kensington, an Exhibition of Engravings produced by mechanical means (such as photogravure and other photographic processes) as a sequel to the Exhibition of Engraving and Etching held during last summer; and, as great advancements have been made in printing in colours since the Exhibition of Modern Illustration in 1901, specimens of colour printing will be included. A Committee, of which Sir William de W. Abney, K.C.B., F.R.S., will act as Chairman, has been formed to advise the Board in carrying out the exhibition. All communications should be addressed to the Secretary, Exhibition of Mechanical Engraving, Board of Education, South Kensington.

* * *

THE Bath and West and Southern Counties Society will hold a Nature Study Exhibition in connexion with its annual meeting at Swansea in May. It invites educational authorities and institutions to send collections, models, &c. Particulars from Mr. T. F. Plowman, 4 Terrace Walk, Bath.

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THE inaugural *conversazione* in connexion with the Artist Division of the Hampstead Conservatoire (Swiss Cottage) will take place on February 11 at 8.30 p.m.

* * *

LORD KELVIN will present the certificates and prizes at the annual prize distribution and *conversazione* at the Northampton Institute, St. John Street Road, E.C., on February 26.

* * *

THE Fédération générale des Instituteurs Belges will utilize the occasion of the Liège Exhibition in 1905 to hold an International Congress on Primary Education. Secretary: M. P. Cnudde, Syngem, Belgium.

* * *

THE L.C.C. has decided to administer the London Education Act as from May 1, the Education Committee to consist of thirty-eight members of the County Council, five women, and five members of the present School Board.

Honours. PROFS. EMIL FISCHER and Adolf Kirchhoff, of Berlin University, Lord Rayleigh, and Prof. Adolf Mussafia, member of the Vienna Academy of Science, have been appointed Knights of the Order Pour le Mérite for Science and Art.

Endowments and Benefactions. THE Finance Committee of the Liverpool Corporation have voted £10,000 as a grant to Liverpool University, to be paid out of a city rate of 1d. in the £.

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THE Clothworkers' Company have voted £1,000, payable in five yearly instalments of £200, to King's College Hospital Removal Fund; the Merchant Taylors' Company, 1,000 guineas in instalments during two years; and Lord Ashcombe has promised £500.

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THE Secretary of State for India in Council has sanctioned a grant of £300 a year to the Indian School and Oriental Languages Department at University College, London.

* * *

IN addition to the £2,000 given by Mr. Walter Palmer, M.P., and the £1,000 given by Mr. G. W. Palmer, to the Physiological Laboratory of London University, Mr. Alfred Palmer, J.P., has given £1,000 conditionally upon the establishment of the Laboratory upon a permanent basis.

* * *

MRS. WINBOLT has offered to the University of Cambridge £500 to found an annual prize in civil engineering, in memory of her late husband, Mr. John Steddy Winbolt, M.A. Trinity College.

* * *

MR. JOHN ARTHUR KENRICK has given a further donation of £3,500 to the endowment fund of the University of Birmingham.

* * *

THE West Riding County Council has agreed to grant £6,000 to the Yorkshire and Sheffield Colleges in view of their becoming Universities, the apportionment to be hereafter determined. The first instalment will be paid "so soon as a reasonable increase of payment by the State shall be made as promised"!

* * *

MISS TALBOT, of Margam Abbey, Glamorganshire, has promised £1,000 to the endowment and extension fund of St. David's College, Lampeter.

* * *

THE Pusey Library at Oxford is expected to obtain some £70,000 under the will of the late Mr. John William Cudworth, of Leeds.

* * *

PRESIDENT HARPER recently announced fresh donations of the value of some 3,000,000 dols. to Chicago University. Of this sum 1,850,000 dols. were from Mr. John D. Rockefeller, and 1,096,466 dols. from an anonymous donor, generally identified with Mr. Rockefeller.

Scholarships and Prizes. THE University of London offers five University Scholarships—in Classics, Mathematics, Chemistry, Economics, and History—£50 each, tenable one year, open (in 1904) without limit of age to candidates that have passed the Intermediate Examination and that are of not more than two years' standing in the University in the June preceding the examination.

* * *

TRINITY COLLEGE, DUBLIN, has founded an annual King Edward Prize, in commemoration of the King's visit last year.

Appointments and Vacancies. MR. W. C. FLETCHER, Head Master of the Liverpool Institute, has been appointed to the new office of Chief Inspector of Secondary Schools.

Mr. Fletcher was Second Wrangler in 1886; Fellow of St. John's

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College, Cambridge; nine years a master at Bedford Grammar School (specially concerned with the modern side in the Army classes); and, since 1896, Head Master of the Liverpool Institute. As Chairman of the Examinations Committee of the Head Masters' Association, he has had special opportunities of watching the development of secondary education.

Mr. C. A. Buckmaster, Acting Senior Chief Inspector at South Kensington, has been appointed Chief Inspector of Schools under the branch of the Board of Education that deals with evening schools, technology, and higher education in science and art.

* * *

THE Professorship of Arabic in University College, London, is vacant by the lamented death of Prof. S. A. Strong. Mr. Strong was also Librarian to the House of Lords and to the Duke of Devonshire. He was only forty.

* * *

DR. W. A. OSBORNE, M.B., B.Ch., D.Sc., Scientific Assistant for Examinations in Biology in London University, has been appointed Professor of Physiology and Histology in the University of Melbourne, in succession to Dr. C. J. Martin, F.R.S., now Director of the Lister Institute of Preventive Medicine.

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MR. H. CROWTHER, B.Sc. (Vict.), has been appointed science master at Sexey's Trade School, Bruton.

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MR. F. W. ARMSTRONG, A.R.C.S., has been appointed science master at the Wells Boys' Blue School.

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DR. MERRY will retire from the Rectorship of Dundee High School at the end of the session.

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MR. PERCY ALDEN, M.A., Hon. Warden of the Mansfield House Settlement, has consented to act for a time as Organizing Secretary to the Friends' Union for Social Study.

* * *

MISS RATTRAY, third science mistress at the Datchelor School for Girls, has been appointed chief teacher of science at the Lady Holles' School, Hackney.

* * *

MISS BIGBY, B.Sc., recently science mistress at Wallington County School, takes Miss Rattray's place at the Datchelor School for Girls.

Literary Items.

THE REV. J. ARBUTHNOT NAIRN'S edition of "The Mimes of Herodas," which we announced in our October issue as in preparation, is promised immediately by the Clarendon Press. It will be furnished with introduction, critical notes, commentary, and collotype illustrations.

* * *

THE Clarendon Press announces a thorough revision of Liddell and Scott's Greek-English Lexicon under the editorship of Mr. Arthur Sidgwick. It is hoped that scholars will send in their corrections and additions.

* * *

THE Clarendon Press promises during the spring "Elizabethan Critical Essays," edited by Mr. G. Gregory Smith, Lecturer on English Literature in the University of Edinburgh, in two volumes (uniform with Prof. Ker's "Essays of Dryden"), the texts thoroughly collated with the original editions and fully annotated, and an introduction on the origins of literary criticism in England.

Mr. Frowde also has in hand a standard edition of the complete works of Ben Jonson, probably nine 8vo volumes in all (uniform with the recently published editions of Kyd and Lyly), by Prof. C. H. Herford and Mr. Percy Simpson, the latter of whom has been engaged for some ten years on a critical examination of the text.

MESSRS. LONGMANS announce the Autobiography of the late Prof. Bain.

* * *

THE Board of Education has issued a "Report on the School Training and Early Employment of Lancashire Children," by Messrs. E. T. Campagnac and C. E. B. Russell (Cd. 1867, 3d.), as a supplement to Vol. VIII. of "Special Reports on Educational Subjects." It deals with the question of how best to fit primary-school boys for their life's work, and how to better their present haphazard method of obtaining employment.

* * *

THE Orient Press (168 Fleet Street, E.C.)—formerly the Primrose Press—has just commenced the issue of a shilling series of versions of the great Oriental religious and literary works under the general title of "The Wisdom of the East." Dr. S. A. Kapadia, Lecturer on Gujarati at University College, London, is the general editor.

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MESSRS. WILLIAMS & NORGATE'S new "International Book Circular" (No. 137) affords a ready view of the most recent literary and scientific works, especially in foreign literature (6d.).

* * *

A HANDY bibliography of Child Study for the year 1902 (344 entries) is given in the December number of the *Pedagogical Seminary* (Kegan Paul, Trench, Trübner, & Co.).

* * *

HISTORICAL students should make a note of the first article in the January number of the *Independent Review* on "Land Monopoly." In view of the coming struggle against land monopoly, the writer says: "It is of the first importance that the nation should realize that the landowners' appeal to history is utterly and absolutely rejected by the facts of history." In the same number literary students will find a delightful account of "The Meanest of Greek Tragedies" (the "Electra" of Euripides), with charmingly skilful translations, by Dr. Gilbert Murray. "The Classics as they might be" will be expounded in the February number by Mr. A. W. Pickard-Cambridge.

* * *

LITERARY readers will find an elaborate "Essai de Littérature comparée" on "Swinburne et la France" in the *Revue de l'Université de Bruxelles* (Janvier) by M. Paul de Reul, who pronounces Mr. Swinburne to be "la première force assurément de l'Angleterre lyrique depuis Shelley—un Shelley moins éthéré, moins pur, mais ralliné, stylisé par les mouvements préraphaélite et esthétique."

* * *

THE *Monthly Review* for January gives a most interesting article by Mr. John Ward, F.S.A., on "The Reconstruction of Karnak," with fine illustrations; also a pleasant paper on "Tennyson and Dante," by the President of Magdalen.

* * *

IN the second number of the *Scottish Historical Review* a first paper on "The Municipal Institutions of Scotland," by Sir J. D. Marwick, a study of "The Bannatyne Manuscript," by J. T. T. Brown, and a fresh examination of "The Fiscal Policy of Scotland before the Union" (worthy of the attention of Mr. Balfour and Lord Rosebery alike), by Dr. W. R. Scott, are all notable articles; and the documents, notes, replies, &c., record much historically valuable matter.

* * *

IN connexion with Prof. Kuno Meyer's revival of the study of Irish in the new School of Irish Learning it is intended to start a periodical devoted to Irish philology, literature, and history, to be edited by Profs. Meyer and Strachan.

* * *

NO. IV. of the Clayesmore "Occasional Papers" sets forth some good practical notions on "Social Ideals for Schoolboys," with a view to "a wider horizon, a freer out-

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look, and as a result some sense of the boy's own relative importance in the world."

* * *

Messrs. George Newnes have started *Technics*, a new organ for technical students (9d. net), printed on good paper, with profuse illustration.

* * *

The *Paidologist*, Vol. V., No. 3, contains well considered articles and discriminating literary notices. We are glad to note its growing vigour.

* * *

The *Church Quarterly Review* (January) discusses the Education Acts and reviews very fully the possibilities of the University of London.

* * *

Mr. A. T. Simmons contributes to *Nature* (December 24, 1903) a careful outline of the leading facts as to the attitude of the more important countries towards the higher education of women—handy for reference.

General.

Cornell University is going to erect a Rockefeller Hall of Physics and a Goldwin Smith Hall of Languages (including a Museum of Archæology) at a cost of half a million dollars.

* * *

Sir Robert Finlay's Rectorial Address at Edinburgh (January 21) dealt with the subject of "International Arbitration." It was delivered in the midst of the time-honoured academic turbulence of such occasions, only a few persons close to the speaker being able to follow it intelligibly.

* * *

Prof. Butcher was entertained by University and other friends in Edinburgh, Mr. A. J. Balfour, Chancellor of the University, in the chair.

* * *

At the annual meeting of the National Home-Reading Union (January 20), Sir William Anson said the Education Office had always regarded the work of the society with the friendliest interest, and hinted at future co-operation.

* * *

The degree of Doctor of the University of Paris has been conferred on Miss Mildred K. Pope (tutor at Somerville College, Oxford) for modern language studies.

* * *

The Board of Trinity College, Dublin, have received the King's letter authorizing them to confer degrees upon women.

* * *

The new science laboratories, chemical and physical, at Ipswich School cost some £1,200.

* * *

The Hon. Mr. Auberon Herbert, one of the executors to the late Mr. Herbert Spencer, has presented a complete set of Mr. Spencer's works to the Senior House Library of Clayesmore School.

* * *

The *Magazine of Art* (February) announces a third competition for paintings by distinguished artists—this time for two water-colour drawings by Mr. Alfred East, A.R.A., and Mr. F. Spenlove-Spenlove, R.B.A.

* * *

The twentieth anniversary number of the *Financial News*, with retrospect by the editor and founder and articles upon the finance of all countries, is chiefly remarkable for its characteristic illustrations of the peoples of various nations. A "Gaudeamus" by Sir Lewis Morris gleams on the front page in letters of gold.

* * *

We record with regret the death of Mr. George Richardson, second master at Winchester, after twenty-six years' able service.

COLLEGE OF PRECEPTORS.

HALF-YEARLY GENERAL MEETING.

The ordinary half-yearly General Meeting of the Members of the Corporation was held at the College on Saturday, January 23.

The Secretary having read the advertisement convening the meeting, Dr. Wormell was appointed Chairman.

The Report of the Council was laid before the meeting, and was taken as read, a copy having previously been sent to every member. It was as follows:—

Report of the Council.

The Council beg to lay before the Members of the College the following Report of their proceedings for the past half-year:—

1. They have to report that the number of candidates entered for the Christmas Certificate and Lower Forms Examinations is about 8,500, showing an increase of about 300 as compared with the corresponding Examinations last year. At the Midsummer Examinations the number of entries was 5,550, making a total for the year of over 14,000, an increase of about 550. The increase is especially noticeable in the Colonial Centres, which are now established in Ceylon, N.W. India, the West Indies and Demerara, Argentina, North China, West and South Africa. Among the newest Centres are Johannesburg and Bloemfontein, where examinations on a comparatively large scale have now been held for the first time. The continued extension of these Examinations may be taken as an indication that the scheme in its present elastic form does not interfere with the ordinary work of the schools.

2. The Professional Preliminary Examination for intending Medical Students and others was held in the first week in September, and was attended by 218 candidates, a smaller number than entered for the September Examination in 1902; on the other hand, the entries for the March Examination showed a considerable increase as compared with the preceding March Examination, and the total for the year is in advance of that for 1902.

3. For the Christmas Examination of Teachers for the College Diplomas no fewer than 583 candidates have entered, being an increase of 68 on the number of entries for any previous Diploma Examination conducted by the College. The Examination will be held in London, and at the following local centres:—Birmingham, Bristol, Leeds, Manchester, Newcastle-on-Tyne, Plymouth, Alnwick, Blackburn, Croydon, Hartlepool, Hayle, Jersey, King's Lynn, Laxfield, Morwenstow, Stornoway, Truro, Worthing, Buenos Ayres, Freetown (Sierra Leone), Worcester and Durban (South Africa), and Hong Kong. In 1904 the Examination will be held at the beginning of September instead of in July as heretofore.

4. In addition to their own Examinations of pupils and teachers, the Council have conducted during the past half-year the Examination and Inspection of a number of Schools by Visiting Examiners and Inspectors.

5. The Thirty-second Annual Series of Lectures to Teachers on the Science and Art of Education, which commenced on the 26th of February with a Course of Twelve Lectures on "The Development of Faculty," by Professor C. Lloyd Morgan, F.R.S., was concluded on the 17th of December with the last of a Course of Twelve Lectures on "Practical Problems in School Organization and Teaching," by Professor J. Adams, M.A., B.Sc., F.C.P.

6. In their last Report the Council announced that, in response to numerous suggestions received from members, they proposed to vary somewhat the character of the Members' Meetings by providing for short discussions on questions of immediate practical interest to teachers, and also for gatherings in which the social element was more distinctly recognized. At the Meeting on the 21st of October, accordingly, there were discussions on two separate subjects—"The Teaching of Geometry" and "Rewards and Punishments in Schools." The second Meeting took the form of a Conversazione, and was held on the 21st of November. The large number of members and their friends who attended both these gatherings, and the manifest interest taken in the proceedings, showed that the new departure was fully appreciated.

7. The Council note that the Consultative Committee have now under their consideration the question of Examinations for School-leaving Certificates, and are taking evidence on the subject.

8. The action of the Board of Education, referred to in the last Report, in admitting to the Register teachers of ten years' standing who can produce satisfactory evidence of ability to teach, has had the effect of adding to the Register a considerable number of deserving teachers who do not possess all the required academic qualifications, and the number of names registered in Column B now amounts to about 4,500.

9. It will be seen, from the accompanying statement of accounts, that the finances of the College are in a satisfactory condition. The Council have been enabled to meet the expenditure entailed by the working of the new scheme of Inspection, as well as that necessitated by extensive decorative repairs to the College building, without reducing the amount of the floating balance.

10. During the past half-year the Diploma of Licentiate has been conferred on 18 candidates, and that of Associate on 86, who had passed the required examinations. Twenty-four new members have been elected, and notice has been received of the withdrawal of two. The Council regret to have to report the death of the following members of the

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College:—Sir Joshua Fitch, Mr. J. N. Bissell, A.C.P., Mr. G. W. Gilmour, Mr. J. R. Storrar, Mr. F. W. Warren, A.C.P., and Mr. A. Watt.

With regard to the question of school-leaving certificates referred to in paragraph 7, Mr. BAUMANN expressed the opinion that, in view of the great diversity of our educational machinery, much time must elapse before a State system of leaving certificates analogous to that at present in existence in Germany could be introduced into this country. He pointed out that in Germany school-leaving certificates qualified the holders for entrance into the Civil Service and also into the professions, including the Army and Navy.

Mr. PINCHES said that the question had been referred by the Board of Education to the Consultative Committee, who had for some time past been collecting information bearing on the subject from educational experts and authorities. Up to the present time the purview of the inquiry had not embraced the substitution of a new machinery for that of the Civil Service Examinations, but rather aimed at the unification of the tests at present imposed on candidates for entrance to certain professions. The idea, he believed, was to introduce into the other parts of the United Kingdom a system which had for some years obtained in Scotland, under which there were three grades of certificates, one for elementary schools and two higher grades for different classes of secondary schools. The matter had been considered by a Committee of the Council, who had been in communication with the Consultative Committee on the subject, and it was anticipated that, if evidence was to be taken from the bodies conducting the various local examinations, the Council of the College would be invited to send representatives to express their views.

Mr. RADFORD, in reference to paragraph 8, thought that the Council ought to have taken means to secure the admission of all members of the College to the Register of Teachers. He considered that a teacher who had taught successfully for many years ought to be permitted to prove his efficiency by the results of his teaching, and ought not to be required to submit himself to the judgment of an individual inspector as to his ability to teach. It was not in this way that the Medical Register was formed, and he did not think it right that an entirely different plan should be followed in setting up a Register of Teachers.

Mr. PINCHES observed that the Register had now been in existence for nearly two years, and it was rather late in the day to declaim against the Council for not securing the inclusion of the members of the College *en bloc*. The Council had, in fact, done their utmost to obtain the best possible terms for the members. The House of Commons had approved the conditions embodied in the Order in Council, and it was the duty of the Registration Council to see that these regulations were properly carried out. This they were endeavouring to do to the best of their power, and they had succeeded in getting the Board of Education to make certain modifications in the original Order, one of which had, he thought, been of considerable advantage to their members—that, namely, by which many teachers of long experience, but without the specific qualifications required, had had their names placed on the Register.

Dr. SCOTT wished to bear testimony to the fact that the claims of private-school masters and mistresses had been most carefully considered by the Registration Council. Admission to the Register depended not on membership of any corporation, but on the possession of certain personal qualifications; and when it was found by experience that the regulations bore hardly upon many teachers who were capable and had done good work, they asked the Board of Education to modify those regulations in the sense of giving the Registration Council more discretionary power than they possessed at the outset. Those who had followed the change would see that the new amending minute had enabled the Council to put on the Register all who could prove themselves to be good teachers, even though they might not possess the academic qualifications prescribed in the Order. What was required was ten years' service and proof of ability to teach. If the evidence was not conclusive, then it was open to the applicant to have his teaching capacity certified by an inspector who heard him teach. On behalf of the Registration Council he desired to say that every competent member of the staff of a recognized school ought to be able to find his way on to the Register.

Mr. GUTTERIDGE, in reference to paragraph 9, wished to know whether the Council had considered the desirability of having the College building lit by electric light.

Mr. PINCHES said he had no doubt that they would all like to see the electric light substituted for gas, but the expense would be considerable. The question, however, had not been lost sight of, and the members might be assured that the change would be made as soon as it was deemed practicable.

Mr. RADFORD suggested that a portion of the balance should be added to the Benevolent Fund, and that, instead of the books of questions that were sent out twice a year to the members, every member should be supplied gratuitously with a copy of the College Calendar.

Dr. BELL asked whether it was not a fact that every application for a grant from the Benevolent Fund had been favourably received.

Mr. PINCHES said that was so in nearly every case, and they had at their disposal, in the interest derived from the fund, a larger sum than that required for the amount of the grants that had been applied for during the year.

The Report as a whole, together with the accompanying abstract of accounts, was then adopted.

The meeting then proceeded to the election of twelve members of the Council in place of the twelve retiring by rotation, and three Auditors.

The SECRETARY having read the list of attendances made by the retiring members at Council and Committee meetings,

Mr. MAPLES protested emphatically against the method adopted in submitting to the meeting the list of persons recommended by the Council for re-election, some of whom showed by the small number of their attendances the degree of interest they took in carrying out the duties entrusted to them. He wished to know whether some better method of voting could not be introduced.

Dr. MOODY thought that it would be a great mistake if the value of individual members of the Council were to be estimated merely by the number of their attendances at the meetings. It was quite possible that a particular member might attend but seldom, though he might render great services to the College.

Mr. WILSON did not see how the Council could do more than offer the members the opportunity of erasing any name or names from the list and inserting others in their place. If the Council did not put forward a list, it might happen that the requisite number could not be nominated. By placing the names on the paper the Council merely notified that the time for which the twelve members had been elected had expired, and that they were willing to serve again.

Mr. PINCHES said the action of the Council was conditioned by the Charter and by the by-laws. By Section V. they were bound to prepare a list of not more than twelve members for election; but this was not to preclude any member of the Corporation who might not be a member of the Council from proposing other candidates, and the name of every candidate so nominated, if forwarded to the Secretary thirty days before the meeting, would be circulated together with the list proposed by the Council. Now, what had members outside the Council done to carry out the directions of the by-law? The Council were under obligation to bring forward a list, and they had submitted the names of the retiring members, leaving it to members to nominate others. It was in the power of the General Meeting to make any alteration in the by-laws, provided that the alteration was not contrary to the Charter. The Council were not responsible for the by-laws, which were drawn up by Mr. Chitty, a most eminent counsel who was afterwards appointed a Lord Justice. If the general body thought that the by-laws should be altered, by all means let them be altered; but it was unfair to censure the Council for doing that which by the Charter they were bound to do.

The CHAIRMAN having appointed Mr. King and Mr. Musson to act as scrutators, the voting papers were distributed and the election was proceeded with. On the scrutators subsequently presenting their report, the following were announced by the Chairman to be duly elected:—

MEMBERS OF THE COUNCIL.

Rev. G. C. Bell, M.A., Hillside, Fountain Road, Norwood, S.E.
Rev. A. W. Boulden, M.A., L.C.P., Christ Church Vicarage, Erith.
Miss F. J. Lawford, Camden School for Girls, Prince of Wales Road, N.W.
R. F. Charles, M.A., 12 St. Alban's Villas, Highgate Road, N.W.
Miss M. Crookshank, Ringwood, Chorley Wood Road, Rickmansworth.
Miss E. Day, Grey Coat Hospital, Westminster.
R. Hawe, The High School for Boys, Wellesley Road, Croydon.
Rev. S. F. Hiron, LL.D., D.C.L., Whatlington Rectory, Battle, Sussex.
Miss S. Jebb, 14 Stockleigh Road, St. Leonards-on-Sea.
Barrow Rule, Dera House, Barclay Road, Croydon.

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R. P. Scott, M.A., LL.D., Parmiter's School, Victoria Park, N.E.
J. Walmsley, B.A., Grammar School, Eccles, Manchester.

AUDITORS.

J. Bell, M.A., LL.D., 4 Beatrice Avenue, Norbury, S.W.
W. C. Brown, M.A., F.C.P., Tollington Schools, Muswell Hill, N.
A. E. C. Dickinson, B.A., LL.B., L.C.P., Grove House, Highgate.

The DEAN then presented his Report, which was as follows:—

THE DEAN'S REPORT.

IN addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Report of the Council, I have now to submit to you, in detail, the statistics and results of the various examinations.

The Christmas Examination of candidates for Certificates took place on the 8th to the 12th of December at 220 Local Centres and Schools. In the United Kingdom the Examination was held at the following places:—Aldershot, Anerley, Ashburne, Attleborough, Bamford, Banbury, Bath, Beckington, Bedford, Biggleswade, Birkdale, Birmingham, Blackheath, Blackpool, Bognor, Bolton, Borden, Bournemouth, Braunton, Brentwood, Bridgnorth, Brighton, Bristol, Burnham (Som.), Cardiff, Carlisle, Castle Cary, Cheltenham, Chepstow, Chertsey, Chiswick, Clacton-on-Sea, Clevedon, Coleford, Congleton, Coventry, Cowes, Crewe, Croydon, Deal, Derby, Devizes, Devonport, Doncaster, Dublin, Durham, Ealing, Earl's Colne, Eastbourne, Edinburgh, Eltham, Evesham, Exeter, Fakenham, Farnworth (Bolton), Faversham, Frome, Gosberton, Grantham, Gravesend, Great Ayton, Greenwich, Halesowen, Halifax, Handsworth, Harrogate, Hastings, Hatfield, Hereford, Herne Bay, Holsworthy, Hull, Hulme, Inverurie, Iron-Bridge, Jersey, Kibworth, King's Lynn, Kingston-on-Thames, Kirkby Stephen, Launceston, Leeds, Lincoln, Liskeard, Liverpool, Llandudno, London, Loughton, Lowestoft, Lucton (Hereford), Lytham, Maidenhead, Maidstone, Malmesbury, Manchester, Margate, Market Deeping, Marlborough, Morecambe, New Brighton, New Malden, Newcastle-on-Tyne, Newport (Mon.), Newton Abbot, Northampton, Norwich, Nottingham, Ongar, Penketh, Penmaenmawr, Peterborough, Plymouth, Portsea, Portsmouth, Ramsey (Hunts), Reading, Reigate, Richmond-on-Thames, Ryde, Saffron Walden, Saham, St. Anne's, St. Austell, St. Ives (Cornwall), St. Leonards-on-Sea, Sale, Salford, Sandwich, Scarborough, Seaford, Selby, Sevenoaks, Sheffield, Shirley, Shoreham, Sittingbourne, Southampton, Southend, Southport, Southwold-on-Sea, Stanford-le-Hope, Sudbury (Suffolk), Sunderland, Tamworth, Taunton, Teignmouth, Torquay, Totnes, Towcester, Wallington, Walton (Liverpool), Wanstead, Warminster, Wellington (Salop), West Norwood, Weston-super-Mare, Wigton, Winchcombe, Winchester, Wisbech, Woking, Wokingham, Wolverley, Worksop, Worthing, Yarmouth, and York. The Examination was also held at Batticaloa and Colombo (Ceylon), Stewart Town (Jamaica), Nassau (Bahamas), Georgetown and New Amsterdam (British Guiana), St. George's (Grenada), St. Lucia and St. Vincent (B.W.I.), Port of Spain (Trinidad), Bloemfontein, Johannesburg, Cape Coast, Lagos, Mussooree (India), Cheefoo (North China), and Lomas de Zamora (Argentine Republic).

The total number of candidates examined (not including 361 examined at Colonial and Foreign Centres) was 5,919, of whom 3,831 were boys and 2,088 girls.

Taking the Christmas and Midsummer Examinations together, the total number of candidates examined for Certificates during the year (not including those who attended the Supplementary Examinations in March and September) was 10,481.

The following table shows the proportion of the candidates at the recent Examination who passed in the class for which they were entered:—

	Entered.	Passed.	Percentage.
First Class (or Senior) ...	487	261	54
Second Class (or Junior) ...	2,298	1,166	51
Third Class	2,894	2,133	74

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (240 in number) who entered only for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination (not including 138 examined at Colonial and Foreign Centres) was 1,940—1,042 boys and 898 girls. Of these 1,675 passed, or 86 per cent.

At the supplementary Examination for First and Second Class Certificates, which was held on the 8th to 10th of September, in London and at the following Provincial Centres, viz., Birmingham, Bristol, Leeds, Liverpool, and Manchester, 203 candidates presented themselves. The number of candidates examined at these supplementary examinations during the year was 497.

The Christmas Examination of Teachers for the College Diplomas took place on the 29th of December and four following days, in London and at the following Local Centres:—Alnwick, Birmingham, Blackburn, Bristol, Croydon, Hayle, Jersey, King's Lynn, Laxfield (Suffolk), Leeds, Manchester, Morwenstow, Newcastle-on-Tyne, Plymouth, Stornoway, Truro, West Hartlepool, Worthing, Buenos Ayres, Durban, Hong Kong, Sierra Leone, and Worcester (Cape Colony). It was attended by 552 candidates, of whom 330 were men and 222 women. On the results of this Examination, 1 candidate obtained the Diploma of Fellow, 27 that of Licentiate, and 163 that of Associate.

The number of schools examined and inspected during the year under the Visiting Examination and Inspection Schemes (A), (B), and (C) was 22.

The College has also conducted certain Examinations for other bodies.

The Report was adopted.

Mr. GUTTERIDGE then moved the following resolution, of which due notice had been given:—

> That it would be in accordance with the well established custom of other corporations and societies, if printed lists of the attendances of members of the Council, both at Council and Committee meetings, were circulated in the Hall for the general convenience of members at the January General Meeting.

He pointed out that the resolution was an amendment of the resolution which he had brought forward at the last General Meeting. It really involved the rights of private members. The reason why more members did not attend the meeting was that they felt they were compelled to take part in proceedings that were already cut and dried. The terms of the resolution were moderate, and in accordance with the well established custom of other bodies, such as the Assistant Masters' Association and the Private Schools' Association.

Mr. RULE said that every member of the College received *The Educational Times*, in which appeared the reports of the proceedings at the meetings of the Council, and the names of those attending each meeting. It was to be observed that some of the members lived in distant parts of the country, and the regularity of their attendance would, no doubt, be affected by the importance of the business that appeared on the agenda. It was more important that there should appear on the executive body the names of men of weight and influence in the country than that there should be a large attendance at every meeting.

Dr. MOODY said that, according to his experience of the practice of a number of corporations and societies with which he was acquainted, it was not in accordance with general custom to publish such a list as that proposed in the resolution.

Mr. THORNTON, on the other hand, instanced the case of University College and the University of London, where such lists were published. The mere fact that a member had only attended once or twice was not in itself a reason why he should not be re-elected; but they did want to have some guidance in what they were doing, and this could, he thought, best be afforded in the way proposed by the mover of the resolution.

On the resolution being put to the meeting it was declared to be lost, 12 voting for and 13 against it.

A vote of thanks to the Chairman concluded the proceedings.

ADJOURNED MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

AN adjourned meeting of the Council was held on January 23. Present: Dr. Wormell, Vice-President, in the Chair: Mr. Baumann, Rev. J. B. Blomfield, Mr. Butler, Mr. Charles, Mr. Eve, Mr. Hawe, Mr. Holland, Mr. Pinches, and Rev. J. Twentyman.

Diplomas were awarded to the successful candidates at the Christmas Examination of Teachers. The Licentiateship Diploma was also granted to Miss H. M. Barnes and Rev. A. L. Fillingham, who had completed their examinations.

[*A list of the successful candidates at the Christmas Examination is given on page* 77.]

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

"ESPERANTO."

To the Editor of "The Educational Times."

SIR,—We have in Europe now about twelve living languages, but apparently that is not enough: Miss Lawrence wants us to

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learn another, "Esperanto," which she says possesses many advantages—*inter alia*, that of being composed of words mainly of Latin parentage. Well and good; but, considering that Latin is studied neither by women (except a few) nor by the industrial or commercial classes, and well nigh forgotten by those who learnt it, I fail to see the good of learning this "international" language.

Not long ago the *Times* contained a letter from the late Sir F. Bramwell, advocating the selection of Italian as a common language on the ground that it was derived from Latin. How it was to be learned in this country he did not and could not say, because he felt that thousands of Italians of both sexes would be required to come over—a preposterous expectation. Now, Miss Lawrence solves the problem in a much easier way. She would simply provide every centre of education with phonographs, thanks to which all peoples of both hemispheres would acquire at will the true accent, the correct pronunciation, of the Esperanto vocabulary.

Granted that the uniform termination of *o* for nouns, of *a* for adjectives, of *e* for adverbs reduces to a minimum the scale of sounds. But it strikes me that Esperanto must make a very monotonous, not to say anti-musical, speech.

By the way, if phonographs have such powers, why should they not be good and equally useful for the practical learning of English, French, German, &c.? It would not only be a great saving; it would also spare our respective countries the troublesome presence of foreigners, not always welcome.

According to your correspondent, Esperanto is already taught "in *lycée* after *lycée*." Of course, the brassy instrument is always at hand, invariably in good temper, with its metallic voice. May I ask the lady to give us the names of the said *lycées* where already it takes the place of German and English instructors?

The question, says Miss Lawrence, should not be left to the decision of academical bodies. Why not? Are they too competent? Who, then, will decide the point scientifically or with some show of authority?

To sum up, I beg to enter my humble protest against all attempts to force upon us Volapüks, Esperantos, or any other *lingua ejusdem farinæ*. Since Leibniz, who was, I think, the first to imagine such a novelty, two hundred years ago, many have been the trials, and none, fortunately, has yet succeeded—and why? *Because a universal language supposes a unique system of social intercourse, and only one sort of intellect throughout the world.*

Had any common language been used all over Europe, as the worshippers of unity would have it, we should have been deprived of our best specimens of literature, of books that make our delight, educating the young, elevating the adults, solacing the old—in fact, constituting the principal elements of progress and civilization.—I am, Sir, &c., ALF. HAMONET.

December 7, 1903.

[Miss Lawrence wrote simply: "The much despised phonograph would be a useful feature, if needed [for the regulation of pronunciation]. So far, the difficulty as regards pronunciation has not arisen." The idea was mooted long before Leibniz (see "La Langue Universelle," by Drs. Couturat and Leau).—ED. *E.T.*]

To the Editor of "The Educational Times."

SIR,—Allow me to add my thanks to those of my colleague Mr. J. C. O'Connor for inserting Miss Lawrence's letter. It seems astonishing to me why all teachers in Great Britain do not at once become adherents and apostles of this marvellous vehicle of intercourse between persons of every profession and calling in all nations.

I speak from personal experience and in all seriousness when I state that (instead of months and years of weary study) that simple, logical, and euphonious idiom "Esperanto" can be acquired by any one giving a few weeks' attention to it—and, once understood, it lasts a lifetime.—I am, Sir, &c., ACH. MOTTEAU.

157 Earlham Grove, Forest Gate, *January* 13, 1904.

P.S.—The classes promoted by the Forest Gate Esperanto group are free to all. Teachers are specially welcome. A class is now held every Tuesday night, 8 to 9 p.m., at 69 Woodgrange Road, Forest Gate.

TEACHERS' DIPLOMA EXAMINATION.

CHRISTMAS, 1903.

THE following are the names of the candidates who passed in the various subjects: (*hon.*) attached to a name, or to a letter denoting a subject, indicates that the candidate obtained Honours in the subject:—

Theory and Practice of Education.

LICENTIATESHIP.

Andrews, W. J.
Armitage, L.
Arnold, Miss E. J.
Baynes-Smith, S. E.
Bilsborrow, Miss H.
Blyth, Miss I.
Bridge, P. S. R.
Brittain, C. E.
Burniston, A.
Butcher, F. E.
Butler, Miss E. A. J.
Cahill, Miss M.
Campe, Miss Z.
Clements, Miss G. C. M.
Collins, Miss E. M.
Cox, A. C.
Dent, E. E.
Dixon, J.
Easterby, W.
Ellis, Miss M.
Fawcett, H. M.
Francis, T. R.
Gandy, Miss E. S.
Gavin, P.
Hallsworth, H. M.
Heape, Miss M.
Herriott, Miss B. A.
James, T. E.
Kingston, W. W.
Kitchener, E. E.
Linney, A. G.
Loos, Miss E.
Montgomery, Miss J. F.
Norton, A. C.
O'Farrell, Miss B.
Phillipson, F.
Pinnington, J.
Power, Miss E. M.
Sohns, Miss L. H.
Stokes, W. J.
Thomas, A. H.
Urwick, Miss H. M.
Vincent, Miss V. E.
Waller, J.
Weeks, Miss E. M. A.
Williams, E. O.
Wilson, J. A. S.
Young, S. J.

ASSOCIATESHIP.

Abbott, W. D.
Adams, F. G.
Adams, S. H.
Allen, H. J.
Ames, H.
Andrew, J.
Armstrong, W. E.
Attewell, H. L.
Bailey, C. H. C.
Baker, W. A.
Ballard, C.
Bamford, W.
Bandulska, Miss H.
Bardwell, H. J.
Beart, Miss A. M.
Bentley, Miss H. M.
Breakspere, W. H.
Breen, Miss C. M.
Brewin, Miss E. S.
Brougham, Mrs. E. A.
Brown, A.
Bucke, Miss A. A.
Carr, W.
Chappell, W. H.
Churchill, J. W.
Clark, D.
Clark, P.
Clayton, W.
Clegg, A.
Cliff, S.
Comber-Taylor, Miss I. M.
Cook, A. E. E.
Cooper, Miss J. L.
Couch., Miss I. E. M.
Craddock, W. H. A.
Crumbleholme, H. G.
Davies, Miss E.
Dawson, Miss M. J.
Dennison, Miss K.
Dews, Miss S. A.
Divers, H.
Dobbins, C. S.
Doherty, Miss E.
Done, A. B.
Donnelly, Miss M. C.
Dorman, Miss C. A.
Dorn, A. H.
Dowling, Miss K. J. R.
Dyson, Miss E. M.
Easey, E. H.
Easter, W. C.
Edwards, Miss D. C. B.
Edwards, E.
Eggers, W. J. C.
Emerson, A.
Fegan, Miss R. E.
Feist, Miss A. F.
Felstead, W. H.
Fielding, Miss M.
Finnie, W. S.
Forster, Miss M. H.
Freestone, Miss F.
Fullwood, H. P.
Gillespie, Miss M. E. J.
Goodeard, Miss E. S.
Gordon, T. W.
Gossling, W. J. J.
Goudge, F. A.
Greville, S. E.
Grimble, H.
Grime, T. A.
Grimshaw, H. A.
Hale, S.
Hammond, Miss A. J.
Hannant, Miss M. C.
Hardie, Miss L.
Harding, Miss K. E.
Hardy, J.
Harris, W. J.
Harwood, L. W
Hassall, Miss M. M.
Hatchard, W. A.
Hatfield, W.
Hawkins, D. C.
Hawley, W.
Haylock, Miss E. S.
Haysman, A.
Henly, Miss M.
Hicks, A.
Hicks, Miss A.
Hinde, T. J.
Hosking, L. T.
Iles, Miss E. E.
Jack, Miss I. G.
James, G. M.
Jeffreys, R. H.
Jennings, Miss M. M.
Johnson, Miss K.
Jones, T. O.
Kilner, Miss F. E.
Knight, A. E.
Lack, A. H.
Lake, F. E.
Lambert, E. A.
Leighton, Miss A. M.
Lewis, O. R.
Linnell, Miss L. E.
Littlewood, L. E.
McCleesh, A. J. H.
McMain, J.
McManus, C. J.
Marsden, Miss G. A.
Mason, H. T.
Morgan, H. G.
Morrison, H. S.
Neal, C. B.
Needham, J. H.
Newburn, G.
Odams, C. H.
Packwood, H. E.
Page, Miss D. E.
Palmer, Miss F.
Palmer, Miss M. E.
Parker, S.
Parry, W. H.
Pasco, C.
Phillips, G.F.T.
Pimm, C. H.
Platts, Miss E. B. G.
Price, L. T.
Priest, E.
Purdom, Miss M.
Quaife, J. E.
Reading, C. E.
Richards, E.
Rigby, E.
Roberton, Miss C. V.
Roberts, Miss R. A.
Roberts, T. R.
Robinson, A.
Rolfe, Miss A. M.
Rose, J. A.
Ross, F. I.
Rowland, T. J. S.
Ryall, E. J.
Sayles, C. P.
Scadden, T. C.
Semmens, W. H.
Shapland, Miss A. M.
Sharp, Miss M. E.
Shaw, F. E.
Shelford, P. W.
Shires, A. L.
Simcox, A.
Simpson, E. H.
Slefrig, S.
Smith, Miss E. M.
Smith, H. W.
Stell, A.
Suckling, C. E.
Swinnerton, R.
Swithenbank, Miss F. A.
Taylor, H.
Thomas, Miss N. C.
Thomas, W. A.
Thornton, H.
Tilley, Miss A. R.
Tilney, T.
Todd, Miss E. F.
Tourle, B. L.
Trendell, E.
Trustram, W. P.
Turner, Mrs. F.
Tustin, R. B. B.
Voy, Miss H.
Wainwright, F. J.
Wakerley, W.
Warne, Miss J. A.
Warren, W. L.
Webley, Miss M. M.
Webster, Miss I. F.
Wescombe, W. B.
Weymouth, P. E.
Willis, J. H.
Willoughby, E. R.
Wilson, W. J.
Workman, Miss M. R.
Wright, Miss Lilias.
Wright, Miss Lucy.

English.

Abbott, W. D.
Allen, H. J.
Alleyn, Miss E.
Armstrong, W. E.
Attewell, H. L.
Aylwin, Miss P. M.
Balls, Miss A. F.
Beart, Miss A. M.
Belham, R. J. D.
Bennett, Miss A. M.
Biss, Miss H. H.
Blunt, G. W.
Cahill, Miss M.
Carlos, J. B.
Carter, R.
Chote, Algernon H.
Cole, Miss A. K. (*hon.*)
Daniel, H.
Davies, E. E.
Devereux, Miss M.
Dixon, Miss F.
Doherty, Miss E.
Dubbelfeld, Miss A.
Edwards, Miss D. C. B.
Edmonds, Miss E. S. (*hon.*)
Eedes, Miss I. M.
Eedes, Miss M. M.
Fawcett, Miss E. M.
Ferguson, R.
Flint, Miss W. M.
Floch, Miss A. J.
Friedrichs, Miss M.
Fullwood, H. P.
Gale, W. J. M. (*hon.*)
Gillespie, Miss M. E. J.
Goodwin, F. C.
Gossling, W. J. J.
Haigh, E. F. A.
Hargett, H.
Harold, C. W.
Harvey, Miss M. A.
Haver, W.
Hawley, W.
Henly, Miss M.
Higginbottom, J.
Hodgson, J. A.
Hughes, B.
Hunnybun, Mme. J.
Ibbett, Miss D.
James, T. W.
Jeffreys, R. H.
Jones, Miss E. I.
Kershaw, Miss H.
Kilner, Miss F. E.
Lambert, E. A.
Littlewood, L. E.
Luckett, Mrs. C. G.
McCleesh, A. J. H. (*hon.*)
Macdermott, Miss M.
Mason, Miss M. J.

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English (*continued*).

Mills, E. G. (*hon.*)
Mills, T.
Molyneux, Miss A. C.
Monks, H.
Morrison, H. S. (*hon.*)
O'Donnell, Miss W.
Parker, Miss H.
Parry, W. H.
Renwick, R.
Richardson, G. A.
Roberts, Miss R. A.
Rockliff, Miss J. (*hon.*)
Rolfe, Miss A. M.
Rose, J. A.
Sadler, H. W.
Sarginson, Miss E.
Schwemmer, Miss E. M
Slator, H.
Smith, Miss E. M.
Smith, H. W.
Stokes, W. J.
Suckling, C. E.
Thomson, Miss W. E.
Thornton, H.
Tilley, Miss A. R.
Turner, Mrs. F.
Vilvandre, G. E.
Voy, Miss H.
Wanless, W. S.
Warne, Miss J. A.
Warner, P. E.
Wenhoener, Miss D.
White, J. H.
Williams, C. E. (*hon.*)
Williams, E. H.
Williams, H. D.
Williams, J. A.
Williams, Miss M.
Willis, Miss C. A.
Wright, Miss Lilias.

English History.

Adams, S. H.
Allen, H. J.
Armstrong, W. E.
Ashcroft-Potter, Miss G. A.
Aucott, W. S.
Aylwin, Miss P. M.
Balls, Miss A. F.
Batterbury, Miss M. M.
Belham, R. J. D.
Biss, Miss H. H.
Blunt, G. W.
Bone, T. W.
Boughton, Miss O. K.
Bowden, B. C.
Burrow, F. J.
Cahill, Miss M.
Carlos, J. B.
Carter, R.
Chadwick, J.
Charter, Miss L. A.
Chote, Albert H. H.
Chote, Algernon H.
Cole, Miss A. K.
Daniel, H.
Davies, E. E.
Dawson, Miss M. J.
Dennison, Miss K.
Denton, W. S.
Derbyshire, Miss A.
Dixon, J.
Doherty, Miss E.
Done, A. B.
Dowling, Miss K. J. R.
Draper, Miss H.
Easter, W. C.
Edwards, Miss D. C. B.
Fawcett, Miss E. M.
Fay, Miss M. J.
Flint, Miss W. M.
Fox, Miss V. M.
Friedrichs, Miss M.
Fullwood, H. P.
Gale, W. J. M.
Goodwin, F. C.
Gordon, T. W.
Gossling, W. J. J.
Haigh, E. F. A.
Haines, G.
Harold, C. W.
Harrison, H. H.
Harvey, A.
Hatchard, W. A.
Haver, W.
Henly, Miss M.
Higginbottom, J.
Hipkiss, Miss E. M.
Hodgson, J. A.
Hogan, J. T.
Hollamby, Miss C.
Hughes, B.
Ibbett, Miss D.
James, T. W. (*hon.*)
Jones, Miss E. I.
Kershaw, Miss H.
Knight, A. E.
Knowles, T. A.
Lambert, E. A.
Luckett, Mrs. C. G.
McAuliffe, Miss C.
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ch. = Chemistry.
g. = Geology.
m. = Mechanics.
p. = Experimental Physics.
ph. = Animal Physiology.
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HERBERT SPENCER AS PURE PHILOSOPHER.

THE *British Friend*, in a generous and able article on Herbert Spencer (January) writes :

The truth is that, with all his unique power of abstract thought, Herbert Spencer was not, in the strict sense of the word, a philosopher at all. His thought hovers on the borderland of philosophy, where science is passing over into metaphysics; but the real metaphysical standpoint he never consistently maintains. That is to say, apart from certain portions of his "First Principles" and of his "Psychology," in which he is compelled for the time to philosophize, and which are the least satisfactory parts of his work, he remains throughout *an observer of phenomena*, for whom the facts of the universe are simply given, as if they had an independent existence. He does not penetrate to what lies below phenomena, or give any satisfactory answer to the fundamental question, What constitutes Reality? He never fully grasped the significance of Descartes's "Cogito; ergo sum," or Kant's critique of knowledge. He never really faced the question, How is knowledge possible, and what are its necessary conditions? He never clearly heard the answer of modern philosophy, that knowledge of a real world is only possible on the presupposition of a mind which is universal and persistent, a consciousness of which the finite consciousness is but (as it were) an off-shoot, like a spark from a fire.

The significance of personality, its conditions and implications, which is one of the deepest problems of philosophy and religion, had for Herbert Spencer little interest. He tried, and wholly failed, to construct a person out of a primordial cell. He begins his psychology without regard to consciousness; but, before he has ended, consciousness is there, and no one knows how it got there. The problem of free will, or self-determination, he rather shirks than faces. His attempt to deduce the moral law from the facts of biology was necessarily foredoomed to failure; for, as Mazzini was never tired of urging, we cannot learn what *ought* to be by reflecting on what *is*. The two problems are in different categories of thought.

A reserved, but acute and delicately suggestive, criticism may be read in the late Prof. Bain's "The Emotions and the Will," towards the end of the volume.

ON SQUARE ROOT APPROXIMATIONS.

By H. B. WOODALL, St. Asaph County School.

MR. R. F. DAVIS'S note in the November number (page 461) recalls an observation I made some time ago on a very simple method of obtaining the square roots of the first 16 integers which is accurate enough for most of the purposes of practical mathematics. For the square roots of 2 and the integers between 9 and 16 the rule may be stated thus: (1) Write the fraction whose denominator is 5 and whose numerator is $5+N$; (2) write down N times the reciprocal of this fraction; (3) convert to decimals and take the mean of the two results. This gives $\sqrt{N}$ with an error of about 0·1 per cent. when $N=10$, and much less for the other values, being only about 0·005 per cent. when $N=2$, and about 0·0001 per cent. when $N=13$. For the square roots of 3 to 8, inclusive, read 4 instead of 5 in the above rule. The following table gives some of the results of both formulæ :—

N	$\sqrt{N}$	$\frac{1}{2}\left\{\frac{N+4}{4}+\frac{4N}{N+4}\right\}$	$\frac{1}{2}\left\{\frac{N+5}{5}+\frac{5N}{N+5}\right\}$
2	1·414,213	1·416,666	1·414,285
3	1·732,051	1·732,143	1·737,500
4	2·000,000	2·000,000	2·011,111
5	2·236,068	2·236,111	2·250,000
6	2·449,490	2·450,000	2·463,636
7	2·645,751	2·647,727	2·658,333
8	2·828,427	2·833,333	2·838,461
9	3·000,000	3·009,615	3·007,142
10	3·162,278	3·178,571	3·166,666
11	3·316,624		3·318,750
12	3·464,101		3·464,705
13	3·605,551		3·605,555
14	3·741,656		3·742,105
15	3·872,983		3·875,000
16	4·000,000		4·004,761

The error of both formulæ is always in excess. The curve of error of $\frac{1}{2}\{(N+5)\sqrt{5}+N\sqrt{(N+5)}\}$ is interesting. It has a maximum turning point at about $N=6$; that is, about the middle of the range throughout which the other formula gives the better approximations. It also has a minimum turning point close to $N=13$. The method was suggested by considering that 2 lies between $\frac{4}{2\cdot5}$ and $\frac{100}{49}$, and that 3 lies between $\frac{4}{1\cdot6}$ and $\frac{144}{64}$, the first formula to be tried being $\frac{1}{2}\{7\ (7-N)+N\sqrt{(7-N)7}\}$, of which the formulæ given above are alternatives when $N=2$ and $N=3$. The curve of error leads to the additional observation that 13 lies between $\frac{3\cdot2\cdot4}{2\cdot5}$ and $\frac{4\cdot2\cdot5}{3\cdot2\cdot4}$, and very near to their mean.

REVIEWS.

THE ILLUSTRATED ENGLISH LITERATURE.

English Literature. An Illustrated Record, in Four Volumes. By Richard Garnett, C.B., LL.D., and Edmund Gosse, M.A., LL.D. Vols. II. and IV. (16s. net each. Heinemann.)

The present volumes complete the work. The second volume covers the period from the age of Henry VIII. to the age of Milton, Dr. Garnett contributing the larger and weightier portion down to the end of the chapters on Shakespeare, and Dr. Gosse dealing with the Jacobean writers of poetry, drama, and prose—a period of two generations, or scarcely one-tenth of the time covered by the first volume. The difference of character and circumstances explains the difference of treatment; "the ample space devoted to those who have made the British literature of the age European—especially its two pre-eminent representatives, Bacon and Shakespeare," is abundantly justified. The fourth volume is disposed in four chapters—"The Age of Wordsworth," "The Age of Byron," "The Early Victorian Age," and "The Age of Tennyson"—the limit being the death of Queen

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Victoria; and "it deals with no living person except with one famous and venerable philosopher, whose work, we must regretfully suppose, is finished"—an exception that no longer holds good. Both volumes are illustrated with the same profusion of portraits (many of them full-page and finely reproduced), scenes, examples of handwriting, of old title-pages, of ancient buildings, and so forth, all of which contribute effectively to realization of the personality of the various authors and the conditions of their literary activity.

Dr. Garnett has been well advised to treat the Elizabethans, and especially the more immediate predecessors of Shakespeare, at considerable length; and this he has done with fullness of knowledge, breadth and maturity of judgment, and freshness of literary expression. He thinks that Bacon must be "acquitted of deliberate wrongdoing," but "censured or compassionated for a deplorable lack of moral sensitiveness," and that his style is at its best in "the noble and flowing periods of 'The Advancement of Learning.'" He has a very decided opinion on the Bacon-Shakespeare question. Having quoted a passage on Perkin Warbeck from "The History of Henry VII.," he says:

> Shakespeare has depicted a similar situation to Perkin's in his "Richard II."; and the contrast between his profuseness and Bacon's sobriety—as marked as that between "The New Atlantis" and "The Tempest"—should alone suffice to decide the so-called Baconian controversy.

In view of "the prevalence of this remarkable delusion," Dr. Garnett considers "Bacon's technical claim to the character of poet," and ridicules it. Returning to the subject in his treatment of Shakespeare, he writes:

> The existence of a long unknown interval in Shakespeare's life during which he may have been subjected to influences making for high culture disposes of the only plausible argument adduced by the advocates of the Baconian authorship of his plays and poems. Even were the case otherwise, it ought to be evident that, whoever the author might have been, it could not be Bacon. To suppose Shakespeare's dramas, Bacon's philosophy, and Bacon's politics to be the simultaneous operation of a single brain is to credit the human mind with higher powers than it possesses. . . . It is, moreover, the case that no great lawyer has ever been a great poet.

Passing over the more common arguments, Dr. Garnett adduces one that he does not remember to have seen brought forward—"the impossibility of the Baconian secret being kept." He says:

> Baconians talk as if Bacon had nothing to do but to write his play at his chambers and send it to his factotum, Shakespeare, at the other end of the town; but nothing can be clearer than that points must have been continually arising requiring consultation with the author, that this author must have lived in a dramatic atmosphere and been in constant communication with the theatre. That this was really the case is proved by the directions to the players in "Hamlet." No one, surely, can doubt that the writer of this scene had been in the constant habit of giving instructions to performers. If he were Shakespeare, no question arises; but if he were Bacon? Did he go down to the theatre for the purpose, taking boat or riding over Old London Bridge; or did he drill the players at his chambers? In either case the actors would speedily discover that they were being tutored by the author in person, and the secret would soon be all over the town. There is no escape from this, unless by maintaining that, whereas all Hamlet's other speeches are by Bacon, this one is by Shakespeare. Unfortunately, it contains five sentences that have become household words wherever English is spoken.

The treatment of the whole of Shakespeare's career and works is conspicuously able and careful. As to the "Sonnets," Dr. Garnett concludes, after an elaborate argument, that, while they "were certainly addressed for the most part either to Southampton or to Pembroke—and Southampton is not entirely out of the question—the evidence derived from dates and the general character of the poems greatly preponderates in Pembroke's favour." As to Hamlet's madness, he "feels no doubt that it is real, though never amounting to lunacy, and that the actual taint of insanity in his mind makes the simulation of it much the easier to him"; and here at last we have the luxury of disagreeing with him. But his appreciation of Shakespeare is finely enthusiastic. Consider "with what remoteness from all possible competition he stands forth as Britain's national poet. To remove any other great poet from our literature would be to lop off a limb from a many-branching tree; to remove Shakespeare would be to take the sun out of heaven."

Again Dr. Gosse has been condemned to struggle for space and to select critically from the multitude of aspirants to immortality. Yet again he might have saved a good deal of space by pruning his composition. In point of knowledge and maturity of judgment he has to bear a severe comparison by the side of his colleague. His range is much more limited: indeed, beyond the bounds of pure literature he never seems to be quite comfortable. Thus, he says of Bentham that "he invented, or first made general, the formula of 'the greatest happiness of the greatest number.'" In dealing with Burke's crusade against Warren Hastings, his attitude to Hastings is nearer to that of Macaulay than to that of modern students who know the facts better and appreciate them more justly. He is evidently without the experience necessary to pronounce upon the relations of the Carlyles. And even on the purely literary ground we should dispute many of his judgments: perhaps none is more regrettable than the violence of his depreciation of George Eliot. With all this, however, Dr. Gosse's survey furnishes a fluent and comprehensive sketch of the literary forces of the time.

In his "Epilogue" Dr. Gosse enters into a brief discussion of principles of criticism. Naturally enough, he deprecates "an arrogant dogmatism" as "nowhere more thoroughly out of place than in a critical history of style"; and, in search for a "criterium [*sic*] of literary production" (IV. 369), he asks: "What if a scientific theory be suggested which shall enable us at once to take an intelligent pleasure in Pope and in Wordsworth, in Spenser and in Swift?" But surely an intelligent pleasure in these writers' works does not await the discovery of a theory. There must be many minds broad enough to appreciate all the four. However, Dr. Gosse reminds us that "Mr. Herbert Spencer has, with infinite courage, opened the entire world of phenomena to the principles of evolution"; but he thinks "we seem slow to admit them into the little province of æsthetics." He proceeds:

> It is surely time that we should recognize only two criteria of literary judgment. The first is primitive, and merely clears the ground of rubbish. It is: Does the work before us, or the author, perform what he sets out to perform with a distinguished skill in the direction in which his powers are exercised? If not, he interests the higher criticism not at all; but, if yes, then follows the second test: Where, in the vast and ever-shifting scheme of literary evolution, does he take his place, and in what relation does he stand, not to those who are least like him, but to those who are of his own kith and kin?

So far good: but there is a third question of no little importance which Dr. Gosse no doubt implies, but which seems to us worth equal prominence with the other two, and that is the competence of the critic in knowledge, experience, impartiality, and sympathetic faculty to sit as judge upon the questions propounded. Meantime we have to thank both authors and publisher for a magnificent work.

A Tale of the Ptolemies.

Tychiades. By Alfred Dickeson. (6s. Fisher Unwin.)

The tale purports to have been "written in the third century B.C. by Ornithovius," and to be "now faithfully translated out of the original" by Mr. Dickeson, who explains elaborately in his preface how "the book has been preserved in his family, unmutilated, down to the present day," as well as the historical conditions of the period and the place in which the events occurred. The story opens in 280 B.C., when Ptolemy the Second (Philadelphus) of Egypt was twenty-nine and Alexandria was already a populous and opulent city. Tychiades, a youthful philosopher seeking to satisfy his thirst for divine knowledge at the sacred wells of Heliopolis, is the connecting link of the multifarious personages and episodes, but he can scarcely be called the hero. Apart from the private story, which contains pathetic personal elements as well as causes that deflect Tychiades from his original pursuit, the interest lies in the depiction of the great public events of the period, with the social conditions amidst which the important personages played their several parts. The central episode is the restoration of the worship of Sarapis and the dedication of the temple in his honour at Rhacotis—a large and complicated reconstruction vividly represented. The Museum at an early stage brings us into contact with Zenodotus, the royal librarian and editor of Homer, and with Philetas, the court poet, and eventually enables us to assist at the foundation of the Ptolemaic School of Philosophy (the seat to be "permanently fixed in the building of the Sarapeum"), and at the origin of a rather disastrous expedition fitted out to "search the land and appropriate, or, when not practicable so to do, examine and exhaustively study on the spot the natural phenomena that abound in this wonderful land of Egypt." At Sebennytus we meet the sage Manetho, the great historian of the Egyptians; and at Heliopolis we witness an extraordinary contest between rival magicians—Titmothis, the son of Manetho, and Anebo, in

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whose hands Sarapis had placed "the sacred books of Hermes Trismegistus," whereby "he was enabled, through the Mirror of Life, to learn everything that has happened in the past and to discover with amazing accuracy those things which shall happen in the future"—and the no less extraordinary attempt of Titmothis to establish his pretension to the presidency of the College of Hermes as High Priest of the sacred city. Incidentally, too, we have the story of King Psam-tik's dream of the Palace of Truth—"a fair virgin arrayed in fine gold" built into a middle chamber "with treasure and great riches," and more than a thousand other rooms around, "in the centre of each brick a heart-shaped piece of the purest gold," and "every brick fashioned to fit exactly into its own place"—with the interpretation thereof by "the wisest men and soothsayers of the kingdom" at Sais. Of the particular personalities the most outstanding is, perhaps, Gigas, the royal curator of the Alexandrian Zoo, who was elected a Fellow of the Museum on the strength of his geographical acquirements. A catalogue of main points, however, but indicates the bones that Mr. Dickeson has clothed with attractive tissue, animated by a vivid imagination. The work is an able reconstruction of a very interesting and important period. In a second edition many grievous weaknesses of English composition should be carefully removed.

Hammurabi and Moses.

The Laws of Moses and the Code of Hammurabi. By Stanley A. Cook, M.A. (6s. net. Black.)

Last September we noticed Mr. Johns's translation of the recently discovered Babylonian Code, and now we have a discussion of the Pentateuchal legislation in comparison with that important document. In preliminary chapters Mr. Cook gives an account of the discovery of the Code, summarizes its contents, and deals with the question of the foreign origin of Hammurabi's dynasty. The theory of Arabian origin he admits "to be extremely plausible," but hesitates to accept:

> If Arabia is the cradle of the Semites, and has best preserved the characteristics of the Semitic race, even as the language approximates most nearly to the primitive Semitic tongue, the hypothesis in question is no doubt *a priori* justifiable. At the same time, nevertheless, one must not too hastily accept the theory that Arabia at this remote period was already in possession of a civilization of a highly developed character that was able to leave its stamp upon either the dynasty of Hammurabi or the earliest Israelites.

Mr. Cook institutes his comparative inquiry first on the elements of law and procedure, and finds a "sufficiently striking" contrast "between the methods that prevailed in Egypt and Babylonia and the simple, primitive 'courts' of the early Arabians and Israelites"—a conclusion of marked importance. He gives no fewer than three of his most elaborate chapters to the Family—a very instructive investigation, though we see no adequate support for his repeated affirmation that the general principles of the Babylonian family system are distinctly (page 152) and strongly (page 128) reminiscent of ancient Rome; indeed, we are told (page 93) that "there are no traces of the *patria potestas* among the ancient Semites," and that the "independence of the Babylonian woman in business affairs may be ascribed partly to a theory which fundamentally distinguishes Semitic legal usage from—for example—the Roman." Next Mr. Cook treats of slaves and labourers, land and agriculture (with some perilous references to original community of property in land), trade and commerce (with general rights to security of individual property), and the protection of the person. The division of the materials is popular and convenient rather than technical; but that is no real drawback. Mr. Cook's conclusions, as well as his arguments, are wisely cautious. Thus:

> It is not until the Exile that we find Assyrian words in the terminology of trade, and it is in the literature of this period that features relating to cult and ritual begin to betray a significant resemblance to Babylonian usage. Descending still further, the minute precision of Talmudical legislation shows intimate signs of an acquaintance with Babylonian law, and the Babylonian origin of the legal phraseology becomes most marked.

The question of the general extent of Babylonian influence over Canaan is also judiciously considered. As already suggested, there are signs of haste here and there, and one could have wished stronger indications of special training in legal and sociological inquiry. The work, however, is laborious and learned, and valuable as a step towards the fuller consideration of the important and complicated questions suggested by the Code. We heartily commend it to general readers as well as to experts.

The Theory of Invariants.

The Algebra of Invariants. By J. H. Grace, M.A., and A. Young, M.A. (10s. net. Cambridge University Press.)

The work fills a large gap which has, of late years, been felt to exist in the ranks of English treatises on mathematics. It was, in fact, the definite expression of the existing need which led the authors to undertake their task. Their object is to give to English students an account, in their native tongue, of the "symbolical method" applied by German mathematicians to the theory of invariants. Of this method one notable advantage is that its use enables the mathematician to throw into more compact form the rather cumbrous expressions to which the subject gives rise. The treatise is not presented to readers as an exhaustive one: it concerns itself only with the full and careful analysis of the principles of one portion of a wide subject. The methods discussed apply with most force to invariants and covariants of *binary* forms: hence the greater portion of the volume considers such methods in connexion with binary quantics, though it should be mentioned that some of the later chapters are devoted to the question of *ternary* forms and to certain general theorems. Ternary forms, however, are viewed geometrically rather than analytically. After giving some illustrations and preliminary definitions, the text proceeds to a simple and admirable development of the principles and uses of the symbolic notation, and gradually leads up to the subject of the sixth chapter—namely, the demonstration of Gordan's great theorem that there exists for any given binary form a complete and finite system of covariants. The student is prepared for the enunciation of Gordan's theorem by the discussion introduced in earlier pages, where it is shown that the proposition certainly holds for special orders of binary quantics. The authors direct the attention of the reader to important differences between their manner of treating the particular cases and the process employed by Gordan to prove the general theorem. Afterwards, the ninth chapter gives the line of argument adopted by Hilbert in his proof of the same theorem. Although the writers reproduce the essentials of the original work of earlier exponents of the theory of invariants and covariants, yet they do not consider themselves obliged to retain details of method or form, and, accordingly, these are freely varied when variation appears desirable. The chapter on types of covariants contains results which are both important and really new. A great deal of attention is given in the later portion of the work to apolarity and rational curves. A welcome characteristic of the new volume is the freedom of the language from mere difficulties of style.

The New "Aristophanes."

The Thesmophoriazusæ of Aristophanes. By Benjamin Bickley Rogers, M.A. (7s. 6d. George Bell.)

Mr. Rogers now follows up the volume containing the "Frogs" and the "Ecclesiazusæ" with a half volume, which will form the second part of Volume IV. in the complete series. It seems a pity that the uniformity of the series should be broken by placing the translation at the end, and not, as before, opposite to the Greek. Perhaps the reason is that it is a "free translation"—exceedingly free, for the translator acknowledges that "the greater part" of it "was composed from memory" when he "had no copy of Aristophanes at hand." "Consequently," he adds, with fine audacity, "it everywhere departs from the sense of the original: words, sentences, and even whole speeches have been omitted, transposed, or added; . . . and sometimes the English goes clean contrary to the meaning of the Greek." Moreover, "it was completed from a copy of Bekker's Aristophanes, the text and arrangement of which differ widely from the text and arrangement of the present edition." One hardly knows how to take an author with a profession such as this: probably the meaning of it is that he is reluctant to undertake the labour of reducing the play to the uniformity of the series; and in any case we cannot but regard it as a great mistake. At the same time we must admit the author's anticipation that "even from this inaccurate version, a reader, taking the play as a whole, may obtain an idea, not altogether inaccurate, of the 'Thesmophoriazusæ' of Aristophanes." As a *tour de force* of the nature described, the rendering is certainly a very remarkable achievement, indicating that the author had the play well in his mind,

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while he was released from absolute subservience to the text. Yet this only increases the misfortune that the whole rendering was not adapted to the text for the final edition. The appendix of various readings is very full, the text being very corrupt. The introduction and the notes show a prolonged and congenial study of the subject and of the text, and will be very useful and suggestive to all readers.

GENERAL NOTICES.

CLASSICS.

Sources for Roman History, B.C. 133-70. Collected and arranged by A. H. J. Greenidge, M.A., and A. M. Clay. (Clarendon Press.)

The materials are arranged chronologically in two divisions—internal and external history, the former being as complete as possible, the latter not detailed (references being sufficient for details of campaigns and battles). On the whole this principle seems decidedly more effective in "presenting that combination of forces which makes the history of a period by making that of each of its single years"; and it avoids a multiplicity of cross-references. In many cases supplementary as well as alternative information has been very usefully presented in connexion with single events, and, fortunately, conflicting evidence is fully recognized. An appendix deals specially with a number of disputed points. The volume bears the marks of much care and labour, and it will be found exceedingly convenient and helpful. It is to be hoped that the authors will extend a like treatment to other periods of Roman history, and thereby foster a fuller and first-hand study of important events and movements. The book is admirably printed and got up.

A Manual of Greek Antiquities. By Prof. Richard Maisch. Translated by L. D. Barnett, Ph.D. (1s. Dent. "The Temple Primers.")

Prof. Maisch is restricted by the nature of the sources, as well as by the space at his disposal, from presenting a complete picture of "the public and private life of the ancient Greeks as it was generally determined by the peculiar character of the land and its people, in its historical growth, and in its local varieties among the several States of Greece." But he sketches the land and the people of Hellas and the institutions of Sparta and of Athens, naturally giving much the larger space to Athens, and limiting his attention to the fifth and fourth centuries before Christ. The work is small, but there is an astonishing quantity of the most pertinent information packed into it by judicious selection and lucid arrangement and statement. There are seven excellent illustrations. Mr. Barnett has done his part ably, and the publishers have embodied the work in a compact and attractive form—a very welcome addition to a series alike delightful and instructive.

MATHEMATICS.

Practical Plane and Solid Geometry for Elementary Students. By Joseph Harrison, M.I.M.E., Assoc.M.Inst.C.E. (2s. 6d. Macmillan.)

A new and revised edition of a work already known to students. The revision brings it into line with the fresh syllabus issued by the South Kensington authorities. The course is mainly practical and experimental; and, besides giving a training in practical geometry, it is capable of affording an intelligent preliminary insight into various branches of mathematical knowledge which should be more or less associated with the study of geometry. A student working through the course under conditions conducive to a thorough assimilation of its teachings must find himself at the end possessed of a considerable amount of varied and valuable working knowledge. The book is not entirely free from errors of some importance.

Essentials of Algebra. By Webster Wells, B.Sc. (4s. 6d. Heath.)

An interesting and well written text-book, giving clear and careful instruction in elementary algebra. The author, moreover, makes it his aim to keep pace with the best modern methods and ideas. Although in special instances the definitions are not quite satisfactory, still, as a general rule, he is justified in stating that accuracy in the formulation of definitions and of rules is a characteristic of his book. The processes are for the most part the ordinary ones; but all works are, perhaps, not as happy in the manner selected for placing the theory before the student. The treatment of factors is good, and the methods adopted in establishing very many algebraic rules—for example, those of fractions—are such as will be readily understood by the reader, and accepted without hesitation. The principles underlying the solution of problems are well explained; but the statement that the symbol of an unknown quantity can only be an abstract number is a little misleading. A brief, but suggestive, appendix on graphs is from the pen of Prof. Aley, of the Indiana University.

Technical Arithmetic and Geometry. By C. T. Millis, M.I.Mech.E. (3s. 6d. Methuen.)

There should be little or no doubt that the book will fulfil its purpose, seeing that the author has had during many years both practical and theoretical experience of the special needs of the students it is designed for—namely, those that are training as artisans in our polytechnics and technical institutes. The text, indeed, closely follows the course of instruction repeatedly given by him to such students—a course that has, therefore, had every opportunity of being submitted to competent tests. By a careful study of the new work, the reader must acquire considerable knowledge of elementary arithmetic, geometry, and mensuration, as required in the workshop, and will be placed in a position to derive full benefit in the shortest possible time from the more technical portion of his training.

Exercises in Arithmetic, Part I. By C. M. Taylor. (1s. 6d. Edward Arnold.)

Many teachers may be glad to avail themselves of ready-made arithmetical exercises which have been found of value in the classes of a high school. This small volume, constituting Part I. of such a collection, deals with the first four rules of arithmetic applied both to abstract numbers and to money. The exercises are intended some for oral and some for written work; and the answers to those of the latter type are given, and appear to be reliable.

PHYSICS.

An Elementary Treatise on the Mechanics of Machinery, with special reference to the Mechanics of the Steam-Engine. By Joseph N. Le Conte. (10s. 6d. net. Macmillan.)

Mr. Le Conte crystallizes in this volume the substance of his teaching for several years as "Instructor" in the Department of Mechanical Engineering of the University of California. Part I. is introductory, dealing briefly with definitions and principles. Part II. handles in six chapters the "Machinery of Transmission" in various forms and by various methods, dynamic problems being tackled incidentally in the course of the kinematic treatment. Part III. is devoted to the mechanics of the steam-engine, as, perhaps, the most important of machines from the point of view of a designer; and here kinematics and dynamics are treated in distinct sections. There are 212 figures in the text, 15 plates appended, and several other full-page illustrations of complicated arrangements. The work shows distinctive ability as well as full command of the principles and the literature of the subject.

Treatise on Thermodynamics. By Dr. Max Planck, Professor of Theoretical Physics in the University of Berlin. Translated by Alexander Ogg, M.A., B.Sc., Ph.D. (7s. 6d. net. Longmans.)

Prof. Planck avoids the methods associated with the great names of Joule and Helmholtz, and starts directly from the two fundamental principles of thermodynamics. These he expounds concisely and clearly, and then proceeds to apply the theorems he deduces to states of equilibrium of various systems. He considers that this more inductive treatment corresponds best to the present state of the science, at the same time recognizing that it "may have in time to yield to a mechanical, or perhaps an electromagnetic, theory." The work is most able, and it is capably presented in English. Dr. Ogg appends a list of Prof. Planck's publications on the subject, 1879-96, which will prove useful for reference.

Electricity and Magnetism, Theoretical and Practical. By C. E. Ashford, M.A., Head Master of the Osborne Royal Naval College. (3s. 6d. E. Arnold.)

Mr. Ashford proposes to lead the beginner gradually up to the standard of University scholarships, without attempting "to write up to (or down to) any syllabus." The book is primarily intended for use by the student in the laboratory, though certain more complicated parts are dealt with as lecture notes. Magnetism is reduced to little more than a preliminary to Voltaic Electricity; and the elementary Theory of Electrostatics is given with unusual fullness. The treatment is lucid, practical, and independent. There are 209 figures.

MODERN LANGUAGES.

Histoire de la Langue universelle. Par L. Couturat, D.Litt., et L. Leau, D.Sc. (Hachette.)

If "la nécessité d'une langue internationale auxiliaire n'est plus contestée par personne," it is, at all events, not easy to satisfy. The authors, who are respectively treasurer and general secretary of the "Délégation pour l'adoption" of such a language, set forth the practical steps that have been taken till now, and give an account of (1) *Systèmes a priori* (pages 11-120), from Descartes to Dietrich (17); (2) *Systèmes mixtes* (pages 121-237), from J. von Grimm to Bollack (12); and (3) *Systèmes a posteriori* (pages 239-514), from Faiguet to the "Idiom neutral" of the Akademi internasional de lingu universal in 1902 (26)—65 *systèmes* (or suggestions for systems) in all—with a summary criticism at the end of each group. A chapter of obituary is devoted to "les langues mortes"—two systems that died in early childhood. In conclusion, the authors inquire: "Que reste-t-il de tant d'efforts faits pour doter l'humanité d'une langue internationale?" We observe that "Esperanto" occupies pages 304-363, and that it receives a rather good testimonial:—"Ainsi ce n'est pas une langue artificielle, figée et morte, simple décalque de nos langues; c'est une langue capable de vivre, de se développer, et de dépasser en richesse, en souplesse et en variété les langues naturelles. Enfin c'est une langue susceptible d'élégance et de

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style, s'il est vrai que la véritable élégance consiste dans la simplicité et la clarté, et que le style n'est que l'ordre qu'on met dans l'expression de la pensée." Since the appearance of "Esperanto" in 1887 there have arisen no fewer than nineteen other systems here expounded, to say nothing of three more that have come up while the volume was in the press. The work is certainly curious and interesting, and it speaks much for the industry of the authors and for their devotion to the project.

Phrases and Dialogues with Translations in Cape Dutch. By J. F. van Oordt, B.A. (Williams & Norgate.)

The phrases and dialogues are of the usual character, including the expressions most likely to be needed by an English sojourner among the Boers. They are preceded by a roughly approximate account of the pronunciation and a broad outline of the grammar. The little book will, no doubt, prove useful in practice.

Orell Füssli's Bildersaal für den Sprachunterricht. Kommentar zum 8. Heft. Von Egli und Rossé. (Hachette.)

A companion volume to the series of school picture books in aid of modern language teaching described in our December number. It contains a collection of questions, for the use of teachers, on the pictures contained in the Eighth (for this purpose identical with the Ninth) Part. At the end of the pictures faced by the questions comes a set of reading exercises, which serve for dictation; each is in three parts, graduated for different classes. These books will be found a boon to the teacher scarcely less than to the pupil.

Travellers' Colloquial Spanish. By Howard Swan. (1s. 6d. Nutt. "Phonetic Series," No. 4.)

Mr. Swan arranges a series of idiomatic Spanish phrases to serve travellers in the ordinary situations, placing on the opposite page the pronunciation and the literal meaning of the words. The phonetic representation is simple, though at first blush it looks clumsy, and might have been spared if people would only take the trouble to read his preliminary explanations. It is a handy little volume, and will be very serviceable for its purpose.

ENGLISH LITERATURE.

The Age of Shakespeare, 1579–1631. By Thomas Seccombe and J. W. Allen. Vol. I., Poetry and Prose; Vol. II, Drama. (3s. 6d. each. George Bell. "Handbooks of English Literature.")

Prof. Hales, the general editor of the series, prefixes to the first volume a well considered and effective "general sketch of the conditions under which the great Elizabethan age of literature" arose, the limit of his aim being "to specify the paramount agencies that made the Elizabethan epoch what it was, and so in some degree to illustrate its absolute uniqueness in the history of English Literature." The naïve statement of the complicated process of collaboration of the authors may be taken simply as an indication of the pains bestowed upon the work. The review of Elizabethan writers is orderly, careful, and lucid, with instructive details embodying the results of modern inquiry, and implying in the student a purpose of serious study, while the independent criticism is fresh and sober. The chronological table at the end of the first volume is full enough for considerably advanced work. The text is fluent and pleasant reading, and the books will be most serviceable whether for direct study or for collateral assistance.

The Little Quarto Shakespeare. Edited by W. J. Craig. (1s. a volume. Methuen.)

The first seven volumes of this miniature addition to the varied library of Shakespearean literature justify the highest expectations raised by the names of the editor and of the publishers. The text is carefully edited, and the introductions and notes are brief, pointed, and judiciously selective. The clear type is delightful to read, and the get-up (in blue morocco) is a pleasure to handle. The popularity of the series is assured; it could not well be better deserved.

The Prose Works of Jonathan Swift, D.D. Edited by Temple Scott. Vol. VI.: The Drapier's Letters. (3s. 6d. George Bell.)

A very careful text of the famous and characteristic Letters, with occasional notes always instructive. This will no doubt establish itself as the standard edition of Swift.

Thomas Shadwell. Edited by George Saintsbury, M.A., LL.D., Professor of English Literature in the University of Edinburgh. (2s. 6d. net. Fisher Unwin. "The Mermaid Series.")

Though Shadwell is commemorated in Westminster Abbey — the monument is excellently reproduced as frontispiece—he was all but blotted out of literary recognition by the ruthless onslaughts of Dryden. The penalty "has been, perhaps, heavy beyond justice." Prof. Saintsbury is but a half-hearted apologist: Shadwell's work, he acknowledges, "is a congeries of the worst faults of the time, redeemed only by merits which are sadly tarnished and mouldered by the effect of the faults themselves." He presents a selection of four plays, not one of which he "can venture to say is good as a whole." Yet Shadwell was a famous man in his own day, and "in the two great dramatic qualities of observation of manners and command of technique of a certain type he stands not only not low, but rather high, among English dramatists." We are glad to have these specimens, and we think Prof. Saintsbury might have been a little more courageous. The get-up is agreeably artistic.

RELIGION AND MORALS.

The First Epistle to the Corinthians. By H. L. Goudge, M.A., Principal of Wells Theological College. (6s. Methuen.)

A volume of the "Westminster Commentaries," whose general editor is Dr. Walter Lock, the Ireland Professor of the Exegesis of Holy Scripture, and whose primary object is "to be exegetical, to interpret the meaning of each book of the Bible in the light of modern knowledge to English readers." Mr. Goudge writes with great facility, simplicity, and sympathy, strictly within the limits of Church doctrine; and no one, Churchman or otherwise, can peruse his work without profit and pleasure. In the "Introduction" he presents vividly the historical circumstances, discusses the authenticity of the Epistle (routing Prof. Steck, of Berne, who has been quite as severely handled by Schmiedel), and reviews and analyzes the contents. The notes generally are very full and instructive. The chief difficulty of Mr. Goudge's task has lain in the treatment of the fundamental problem of the Resurrection (chapter xv.). He should have grasped his nettle more firmly, and left no aspect of the question inadequately handled. On sharply contested matters—and especially matters of supreme importance—a commentator should write as if his opponent stood over against him in the flesh, holding him resolutely to all the points of the argument. Other questions of much delicacy and difficulty Mr. Goudge has treated with considerable breadth and success. On the whole, his commentary ought to be very serviceable, as well as popular.

Essays and Letters. By Leo Tolstoy. Translated by Aylmer Maude. (1s. net. Grant Richards. The World's Classics.)

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EDUCATION.

The Theory of Education in Plato's Republic. By John E. Adamson, M.A. (Lond.), Principal of the Normal School, Pretoria. (4s. 6d. Swan Sonnenschein.)

Mr. Adamson adopts the plan of first giving a summary of Plato's opinions and then adding expository and critical remarks. He thinks the chief value of Plato's theory lies "in the closeness with which it is bound up with social and philosophical problems"; and it is the difficulties arising from this involvement that he labours to clear up for the student. The statement is full and fair, and the exposition is lucid, exhibiting acquaintance with the best commentaries, advancing thoughtful criticisms, and steadily keeping in view the problems of modern education. The subject is thoroughly well considered, systematically digested, and treated with much verve and freshness. The volume is rich in interest, and cannot fail to be most instructive and suggestive.

Aristotle on Education. By John Burnet, Professor of Greek in the University of St. Andrews. (2s. 6d. Cambridge University Press.)

This is a new volume of "The Cambridge Series for Schools and Training Colleges," beautifully printed and attractively got up. The body of it consists of extracts from the "Ethics" and the "Politics" of Aristotle translated, arranged, and annotated by Prof. Burnet. A brief introduction places the student in position "to appreciate the point of view from which Aristotle regards educational problems"; and a "conclusion" is intended "to guard the student against certain natural misunderstandings." For the justification of the interpretation of Aristotle's thought underlying the translation and "differing in some respects from that which is generally accepted," Prof. Burnet refers to his edition of the "Ethics." The treatment is conspicuously able and illuminative, and the volume should be in the hands of all teachers that are still students.

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Real Things in Nature. By Edward S. Holden, Sc.D., LL.D., Librarian of the United States Military Academy, West Point. (3s. 6d. Macmillan.)

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Hazell's Annual for 1904 (3s. 6d., Hazell, Watson, & Viney; Hodder & Stoughton) brings the record of events down to the end of last year. There are two special features—a very full index (which will be particularly advantageous) and a vigorous consolidation and classification of articles. The fiscal question is prominent, treated from both sides, and education obtains considerable notice. More than half of the book, we are told, is new matter, while the rest has been so thoroughly revised and rewritten as to be really new. It has made itself indispensable.

One and All Gardening, 1904, edited by Edward Owen Greening (92 Long Acre, 2d.), has a store of practical articles, many of them with a literary flavour, and the illustrations are profuse (200) and very good. The present is the ninth issue of this popular and useful annual.

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MATHEMATICS.

15414. (Robt. W. D. Christie.)—In any right-angled triangle where the legs a, b differ by unity, and c, the hypothenuse, is an integer, prove $2+3c+4a = x^2+y^2$, and find an infinite number of integral values of a, b, c, x, and y.

Solutions (I.) *by* Lt.-Col. Allan Cunningham, R.E., *and* Professor Sanjána, M.A.; (II.) *by* J. Blaikie, M.A., *and* R. F. Davis, M.A.; (III.) *by the* Proposer.

(I.) Let $a<b$; then $b = a+1$, $a+b = 2a+1 = d$ (suppose),

$$c^2 = a^2+b^2 = 2a^2+2a+1;$$

therefore $2c^2 = (2a+1)^2+1 = d^2+1$, or $d^2-2c^2 = -1$.

The solutions (c, d) of this Diophantine are known to be as below, whence follow a, b:

$c =$	1	5	29	169	985	...
$d =$	1	7	41	239	1393	...
$a =$	0	3	20	119	696	...
$b =$	0	4	21	120	697	...

where each solution (c_r, d_r) may be derived from the two preceding in succession ad inf. by the relation $c_r = 6c_{r-1}-c_{r-2}$, $d_r = 6d_{r-1}-d_{r-2}$.

Another relation is $c_r = 3c_{r-1}+2d_{r-1}$, whence $3c_{r-1}+4a_{r-1}+2 = c_r$. Now c_r is known to be of form $(x_r^2+y_r^2)$ always; therefore

$$3c+4a+2 = x^2+y^2 \text{ always.}$$

By resolving c_r, the successive x_r, y are found:

$c =$	1	5	29	169	985	...
$x =$	1	2	5	12	29	...
$y =$	0	1	2	5	12	...

and each x_r, y_r may be derived from the two preceding in succession ad inf. by the relation $x_r = 2x_{r-1}+x_{r-2}$, $y_r = 2y_{r-1}+y_{r-2}$.

(II.) Let y, z be two integers which satisfy the relation

$$2yz-1 = y^2-z^2 \quad \ldots\ldots(1);$$

then y', z' will also satisfy the equation, if $y' = 5y+2z$, $z' = 2y+z$. For, substituting, we obtain $2(5y+2z)(2y+z)-1 = (5y+2z)^2-(2y+z)^2$, or

$$2(10y^2+9yz+2z^2)-1 = (7y+3z)(3y+z) = 21y^2+16yz+3z^2,$$

which reduces to (1).

If we take $a = y^2-z^2$, $b = 2yz$, $c = y^2+z^2$, then $a^2+b^2 = c^2$, and $a = b-1$ by (1). Also

$$2+3c+4a = 2(2yz-y^2+z^2)+3(y^2+z^2)+4(y^2-z^2) = 5y^2+4yz+z^2 = x^2+y^2,$$

when $x = 2y+z$. If we substitute y', z' for y, z, we find that

$$x' = 2y'+z' = 12y+5z = 5x+2y, \quad y' = 5y+2z = 2x+y, \quad z' = x.$$

Equation (1) is satisfied by the values $y = 2$, $z = 1$, which give $x = 5$, $a = 3$, $b = 4$, $c = 5$, $2+3c+4a = 29 = 5^2+2^2$. The following table gives the first three cases, and an infinite number may be derived by means of the relations established above:—

x	y	z	a	b	c	$2+3c+4a$
5	2	1	3	4	5	29
29	12	5	119	120	169	985
169	70	29	4059	4060	5741	33461

(III.) Let q_n be the n-th convergent of Y in the equation

$$X^2-2Y^2 = \pm 1;$$

then $4(q_n^2-q_{n-1}^2)+3(q_n^2+q_{n-1}^2)+2 = (2q_n+q_{n-1})^2+q_n^2$ .....(1)

or $4(2q_nq_{n-1})+3(q_n^2+q_{n-1}^2)+2 = (2q_n+q_{n-1})^2+q_n^2$ .....(2).

In the theorem let a or $b = q_n^2-q_{n-1}^2$ or $2q_nq_{n-1}$,

$$c = q_n^2+q_{n-1}^2, \quad x = 2q_n+q_{n-1}, \quad y = q_n.$$

For the connexion v. Dr. Muir, *Proc. Roy. Soc. Edin.*, p. 264.

15383. (A. M. Nesbitt, M.A.)—If $\alpha+\beta+\gamma$ be a multiple of π, and if $x^r\sin r\alpha+y^r\sin r\beta+z^r\sin r\gamma$ vanishes when $r = 1$ and $r = 2$, it vanishes for any positive integral value of r.

Solution by the Proposer.

If we take $x\sin\alpha = q-r$, $y\sin\beta = r-p$, $z\sin\gamma = p-q$, we may put $x\cos\alpha = \lambda p+\mu$, $y\cos\beta = \lambda q+\mu$, $z\cos\gamma = \lambda r+\mu$, in which λ, μ may at present have any values. These yield

$$x(\cos\alpha+\lambda\sin\alpha) = \lambda(p+q-r)+\mu = \lambda q+\mu-\lambda y\sin\beta = y(\cos\beta-\lambda\sin\beta) \quad \ldots\ldots(1)$$

So also $y(\cos\beta+\lambda\sin\beta = z(\cos\gamma-\lambda\sin\gamma)$ ..... (2),

$$z(\cos\gamma+\lambda\sin\gamma) = x(\cos\alpha-\lambda\sin\alpha) \quad \ldots\ldots(3).$$

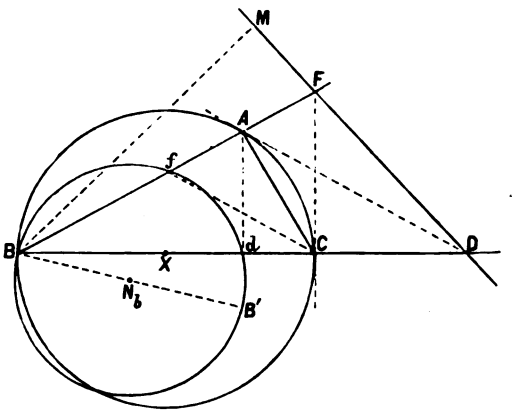
By multiplying (1), (2), and (3) we get $\lambda^2+\Sigma\cot\beta\cot\gamma = 0$; therefore $\lambda^2 = -1$. Hence $x(\cos\alpha+i\sin\alpha) = y(\cos\beta-i\sin\beta)$, ...; therefore $\Sigma x^n(\cos n\alpha+i\sin n\alpha) = \Sigma x^n(\cos n\alpha-i\sin n\alpha)$; therefore $\Sigma x^n\sin n\alpha = 0$.

10113. (Professor Gob).—Lorsque la base BC d'un triangle ABC est fixe et que l'angle de Brocard est constant, les centres des cercles de Neuberg (N_b), (N_c) décrivent une circonférence; le cercle (N_b) a pour enveloppe un limaçon de Pascal; la droite de Lemoine de ABC enveloppe une conique ayant pour foyers les points B, C.

Solutions (I.) *by* C. E. Youngman, M.A.; (II.) *by* R. Tucker, M.A.; (III.) *by* Professor Sanjána, M.A.

(I.) Draw AD, CF touching the circle ABC, and Cf, Ad parallel to them, the points D, d being on BC and F, f on AB. Then FD is the Lemoine line, and fd is parallel to it; also the triangles ACf, dAC have angles A, B, C, and therefore the circle Bfd is (N_b). Let B′ be the point opposite to B on this circle.

The triangle N_bCA is isosceles, with vertical angle 2ω; therefore $CN_b = \frac{1}{2}b\operatorname{cosec}\omega$. And the radius of the circle N_b (which is orthogonal to the circle with centre C and radius b) is $\frac{1}{2}b\operatorname{cosec}\omega\sqrt{(1-4\sin^2\omega)}$, or $e\,CN_b$, if we write e for $\sqrt{(1-4\sin^2\omega)}$. Therefore $BN_b : CN_b = $ const., and N_b describes a circle whose centre divides BC externally in the ratio $e^2 : 1$. Its radius is $\frac{1}{4}ae\operatorname{cosec}^2\omega$. And naturally N_c describes an equal circle, symmetrical on BC to the other. The locus of B′ is also a circle.



Invert the figure from B; then (N_b) becomes a straight line n_b, and B′ becomes b', the projection of B on n_b; therefore the locus of b' is a circle. Hence the envelope of n_b is a conic having B for focus, and the envelope of (N_b) is the focal inverse of this—a limaçon.

Draw BM perpendicular to FD, and bisect BC at X. Then BfB′, BMD are similar triangles, and BM . BB′ = Bf . BD = BC . BA; therefore BM . BN_b = BX . BA, and the triangles BMX, BAN_b are similar; therefore XM : XB = AN_b : BN_b = 1 : e and M moves in a circle about X. Hence FD touches an ellipse with focus B, centre X, and eccentricity BX : XM or e; which is also the eccentricity of the Brocard ellipse.

[Rest in Vol.]

15357. (A. M. Nesbitt, M.A.)—Evaluate $\int_0^\infty \frac{x\,dx}{e^{cx}\cosh x}$, c being between +1 and −1.

Solution by G. H. Hardy, M.A.

Since $e^{-cx}\operatorname{sech}x = 2\sum_0^\infty(-)^n e^{-(c+2n+1)x}$ and $\int_0^\infty e^{-px}x\,dx = \frac{1}{p^2}$ $(p>0)$,

$$\int_0^\infty \frac{x\,dx}{e^{cx}\cosh x} = 2\sum_0^\infty \frac{(-)^n}{(c+2n+1)^2} = 2\frac{d^2}{dc^2}\log[\Gamma\tfrac{1}{4}(c+1)/\Gamma\tfrac{1}{4}(c+3)].$$

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By integration with respect to c we can deduce the values of

$$\int_0^\infty \frac{e^{-cx}}{\cosh x}\,dx, \quad \int_0^\infty \frac{e^{-ax}-e^{-bx}}{\cosh x}\,\frac{dx}{x}.$$

It is not necessary that $c<1$; the condition $c>-1$ is sufficient.

5225. (The late T. Cotterill, M.A.)—If the sides ab, $a'b'$ of two triangles abc, $a'b'c'$ meet in z and a transversal cut ca, cb, $c'a'$, $c'b'$ respectively in $\alpha, \beta, \alpha', \beta'$, prove that the two conics $zab'\alpha\beta'$, $za'b\alpha'\beta$ cut again in three points on the cubic locus of points at which the three pairs of points (aa'), (bb'), (cc') subtend angles in involution.

Solution by Professor Nanson.

The locus of the intersection of the two conics, for different positions of the transversal, is a cubic. For, if $x, y, \gamma, x', y', \gamma'$ are the lines ca, $c'b'$, ab', $c'a'$, cb, $a'b$ and ω is the variable transversal, the two conics are $xy = k\gamma\omega$, $x'y' = k'\gamma'\omega$, where k, k' are constants determined by the fact that the conics pass through z. Eliminating ω, the locus of the remaining three intersections is the cubic $k'xy\gamma' = kx'y'\gamma$. This cubic passes through the nine intersections of x, y, γ with x', y', γ. The involution cubic also obviously passes through these nine points. Now, if p be the intersection, distinct from c, c', z, of the conics corresponding to the position cc' of the transversal ω, we clearly have

$$p(ab'cc') = z(abcc) = z(a'bc'c) = p(a'bc'c)$$

and therefore p is also a point on the involution cubic. Hence the two cubics coincide.

15462. (R. Chartres.)—If $1/x = \cdot\dot{a}bcd\ldots h\dot{k}$ in any scale, radix $= r$, then $p/x = \cdot\dot{k}abcd\ldots\dot{h}$. Find p, and show that there is an infinite number of scales where $1/x$ gives the same number of digits as above, and where p/x can be obtained by putting the last digit first. Give also the general value for the radix.

Solution by the Proposer.

$1/(mr-1)$ can be expressed as a recurring radix fraction by putting unity for the last digit and multiplying by m towards the left; therefore when $1/x = k/(mr-1)$ the fraction $= \cdot\dot{a}bc\ldots h\dot{k}$ and $m/x = \cdot\dot{k}abc\ldots\dot{h}$. Also, since $kx = mr-1$, therefore $1/x = (k+mn)/[m(r+nx)-1]$ will have in the scale, radix $(r+nx)$, the last digit $(k+mn)$ and m for multiplier, and m/x will be found by putting the last digit first, thus: $\frac{1}{7}$ with radix 3, 10, 17, $\ldots = \cdot\dot{0}10212\dot{1}$, $\cdot\dot{1}42857\dot{1}$, $\cdot\dot{2}74(14)9(12\dot{1})$, $\ldots$, the multiplier in each case being 5, and $\frac{5}{7}$ will be found at once by putting the last digit first.

15469. (Lt.-Col. Allan Cunningham, R.E.)—Find a series of pairs of right-angled triangles whose sides $(a, b, c; a', b', c)$ are integers, and with a common hypothenuse (c), and such that $c-b = b-b' = 1$.

Solutions (I.) *by* Rev. T. Wiggins, B.A.; (II.) *by* D. Biddle; (III.) *by the* Proposer.

(I.) The sides are $[\sqrt{(2b+1)}, b, b+1]$, $[2\sqrt{b}, b-1, b+1]$; therefore $\sqrt{(2b+1)}$, $\sqrt{b}$ must be integral. Let $2b+1 = x^2$, $b = y^2$; therefore $x^2-2y^2 = 1$, which is satisfied by $x = 3$, $y = 2$. Hence

$$(x^2-2y^2) = (3^2-2.2^2)^n;$$

therefore $$(x+\sqrt{2}\,y)(x-\sqrt{2}\,y) = (3+2\sqrt{2})^n(3-2\sqrt{2})^n.$$

Now put $x+\sqrt{2}\,y = (3+2\sqrt{2})^n$ and $x-\sqrt{2}\,y = (3-2\sqrt{2})^n$; therefore $2x = (3+2\sqrt{2})^n+(3-2\sqrt{2})^n$, $2\sqrt{2}\,y = (3+2\sqrt{2})^n-(3-2\sqrt{2})^n$. As n may have any value, we find the series of values of x and y, whence we obtain b.

Cor.— $n = 1$, $y = 2$, $b = 4$; therefore triangles are (3,4,5), (4, 3, 5). $n = 2$, $y = 12$, $b = 144$; therefore triangles are (17, 144, 145), (24, 143, 145). $n = 3$, $y = 70$, $b = 4900$; therefore triangles are (99, 4900, 4901), (140, 4899, 4901).

[Rest in Vol.]

9836. (Professor Lévy.)—Soient PA, PB, PC, PD les quatre normales issues d'un point quelconque P à une ellipse. Démontrer (1) que si la droite AB tourne autour d'un point fixe M, la corde CD enveloppe une parabole tangente aux deux axes; (2) la réciproque; et (3) trouver le lieu des foyers de ces paraboles lorsque le point M parcourt une droite donnée.

Solution by A. M. Nesbitt, M.A., Frances E. Cave, *and others.*

(1) If the chords $lx+my = 1$, $l'x+m'y = 1$ ..... (1, 2)

of the ellipse $x^2/a^2+y^2/b^2 = 1$ be such that the normals at their extremities are concurrent, then (C. Smith, § 196)

$$a^2ll' = b^2mm' = -1 \quad \ldots\ldots (3).$$

Now, if (1) passes through (p, q), we find at once by ordinary methods that the envelope of (2) is

$$(b^2xp-a^2yq)^2+2a^2b^2(b^2ap+a^2yq)+a^4b^4 = 0 \quad \ldots\ldots (4),$$

which is plainly a parabola touching the principal axes.

(2) Again, if (2) be a tangent to $\sqrt{(\lambda x)}+\sqrt{(\mu y)}+\sqrt{\nu} = 0$, we have $\lambda/l'+\mu/m' = \nu$, which, by virtue of (3), gives $a^2\lambda l+b^2m\mu+\nu = 0$, showing that (1) passes through the point $(a^2\lambda, b^2\mu)$.

Now we readily find for the focus of (4)

$$x/b^2p = y/a^2q = -a^2b^2/(b^4p^2+a^4q^2) = \sqrt{(x^2+y^2)}/\sqrt{(b^4p^2+a^4q^2)},$$

whence $b^4p^2+a^4q^2 = a^4b^4/(x^2+y^2)$. Thus

$$p = -b^2x/(x^2+y^2), \quad q = -a^2y/(x^2+y^2);$$

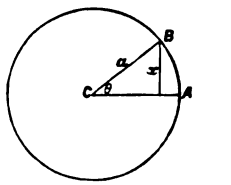
so that, if (p, q) move on the line $\alpha x+\beta y = 1$, the locus of the focus is the circle $x^2+y^2+\alpha b^2x+\beta a^2y = 0$.

15391. (R. Chartres.)—Find the mean value of Z^n, where (1) Z = area of the triangle formed by joining two random points in a circle with the centre, (2) Z = volume of the tetrahedron formed by joining three random points in a sphere with the centre.

Solution by the Proposer.

(1) $\mathrm{M}(Z^n) = (\frac{1}{2}a)^n\,\mathrm{M}(x^n)\,[2/(n+2)]^2$ for A and B to move internally

$$= (\tfrac{1}{2}a^2)^n\,\frac{2^3}{(n+2)^2}\,\pi\int_0^{\frac{1}{2}\pi}\sin^n\theta\,d\theta.$$

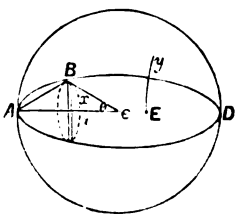


(2) Let A and B be random points on the sphere, and y a perpendicular from any point in the solid hemisphere on the plane ABDC.

$$\mathrm{M}(Z^n) = (\tfrac{1}{2}a)^n\,\mathrm{M}(x^n)\,(\tfrac{1}{3})^n\,\mathrm{M}(y^n)\left(\frac{3}{n+3}\right)^2$$

$$= (\tfrac{1}{2}a)^n a^n\int_0^{\frac{1}{2}\pi}\sin^{n+1}\theta\,d\theta\,(\tfrac{1}{3})^n \times \frac{3a^n}{(n+1)(n+3)}\left(\frac{3}{n+3}\right)^2$$

$$= (\tfrac{1}{6}a^3)^n\,\frac{3^3}{(n+1)(n+3)^3}\int_0^{\frac{1}{2}\pi}\sin^{n+1}\theta\,d\theta.$$



If $n = 1$, then $\mathrm{M}_1 = \dfrac{9}{1024}\pi a^3$.

15344. (R. W. D. Christie.)—Prove that any integer

$$N \equiv r^n.d_n+r^{n-1}.d_{n-1}+\ldots+s,$$

when (1) r = any radix whatever, (2) s = sum of the digits, (3) $d_n = n$-th differential divided by $n!$ *Ex.:*

(1) $12345 \equiv 9^4.1+9^3.6+9^2.15+9^1.20+15 = 12345$,

where $r = 10$, $s = 15$, $d_4 = 1$, $d_3 = 6$, $d_2 = 15$, $d_1 = 20$;

(2) $54321 \equiv 7^5.1+7^4.10+7^3.32+7^2.46+7^1.37+15 = 54321$,

where $r = 8$, $s = 15$, $d_5 = 1$, $d_4 = 10$, $d_3 = 32$, $d_2 = 46$, $d_1 = 37$.

Solution by the Proposer.

(1) In Question 15191 (for solution of which see *Mathematical Reprint*, New Series, Vol. IV., p. 58) let $N = AX^2+BXY+CY^2$; then

$du/dX = 2AX+BY$ and $du/dY = 2CY+BX$,

$du/dx = 2A(sx+1)+B(sy+1)$, and $du/dy = 2C(sy+1)+B(sx+1)$;

therefore

$$(2AX+BY)\{B(sx+1)+2C(sy+1)\}-(2CY+B)\{2A(sx+1)+B(sy+1)\} = 0.$$

Thus $(B^2-4AC)(Y)(sx+1) = (B^2-4AC)(X)(sy+1)$; therefore

$$Y-X = s(Xy-Yx) = 0,$$

which proves the theorem. (See Prof. Young's *Calculus*, p. 82.) Similarly for higher forms.

(2) In Question 15191 we have $N = AX^n+BX^{n-1}+\ldots+Z$, where

$$X = (Ax^n+Bx^{n-1}+\ldots+Z)\,k+x = sk+x, \text{ say;}$$

then $$N = S\left(\frac{k^ns^{n-1}}{n!}\frac{d^nu}{ds^n}+\frac{k^{n-1}s^{n-2}}{n-1!}\frac{d^{n-1}u}{ds^{n-1}}+\ldots+1\right).$$

Now Question 15344 is a special case of this theorem where $x = 1$, X = any radix, or $r = sk+x = sk+1$; therefore $k = 1/s(r-1)$. Thus

$$(k^ns^n/n!)(d^nu/ds^n)$$

becomes $\{(r-1)^n/n!\}\,d_n$, and generally

$$N = \{(r-1)^n/n!\}\,d_n+\{(r-1)^{n-1}/(n-1)!\}\,d_{n-1}+\ldots+S.$$

In the examples given we have

$$12345 = 1.10^4+2.10^3+3.10^2+4.10^1+5 = 9^4.d_4+9^3.d_3+9^2.d_2+9^1.d_1+15$$

where d_1N $(r=1)$ gives $4+6+6+4 = 20$, $(d_2/2!)$N gives $(12+12+6)/2 = 15$,

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$\{(d_3)/3!\}$ N gives $(24+12)/6 = 6$, $(d_4/4!)$ N gives $1 = 1$. Hence

$$12345 = 9^4.1 + 9^3.6 + 9^2.15 + 9^1.20 + 15$$

and

$$54321 = 9^4.5 + 9^3.24 + 9^2.45 + 9^1.40 + 15.$$

It is clear the theorem leads to other developments.

15249. (R. W. D. Christie.)—If r be any primitive root of a prime of the form $4m-1$, then three others are r^{-1}, $(ri)^2$, $(ri)^{-2}$, where $i = \sqrt{(-1)}$.

Solution by Lt.-Col. Allan Cunningham, R.E.

Let $\rho = 1/r$; then $\rho r = 1$; therefore $\rho^{\frac{1}{2}(p-1)} r^{\frac{1}{2}(p-1)} = 1$. But $r^{\frac{1}{2}(p-1)} \equiv -1 \pmod p$ [by hypothesis];

therefore $\rho^{\frac{1}{2}(p-1)} \equiv -1 \pmod p$, and, since no exponent less than $\frac{1}{2}(p-1)$ will suffice to remove r from the above equality, therefore $\frac{1}{2}(p-1)$ is the lowest exponent for ρ also; so that ρ is a primitive root of p.

Next $(i^{\frac{1}{2}(p-1)})^2 = (-1)^{2m-1} = -1$; therefore

$$(r^2 i^2)^{\frac{1}{2}(p-1)} \equiv (r^{p-1})(i^2)^{\frac{1}{2}(p-1)} \equiv (+1)(-1) \equiv -1 \pmod p.$$

Hence, as no exponent less than $\frac{1}{2}(p-1)$ will suffice to reduce $r^2 i^2$ to -1, it follows that $r^2 i^2$ is a primitive root. Hence (by the first theorem above) its reciprocal $(r^2 i^2)^{-1}$ is also a primitive root.

15450. (Professor Langhorne Orchard, M.A., B.Sc.)—Find the product of the sum and the difference of the series—

$1 + 6 + 21 + 52 + 105 + \ldots$ to n terms, $3 + 14 + 39 + 84 + 155 + \ldots$ to n terms.

Solutions (I.) *by* Rev. T. Wiggins, B.A.; (II.) *by* C. M. Ross.

(I.) Let the sums and the terms of the series be respectively A, B; $u_1 + u_2 + \ldots$, $v_1 + v_2 + v_3 + \ldots$. Then $v_r + u_r = 2r(r^2+1)$; therefore

$$A + B = 2\left[\tfrac{1}{4}[n(n+1)]^2 + \tfrac{1}{2}[n(n+1)]\right] = \tfrac{1}{2}n(n+1)(n^2+n+2).$$

Also $v_r - u_r = 2r^2$; therefore $A - B = \frac{1}{3}[n(n+1)(2n+1)]$; whence

$$(A+B)(A-B) = \tfrac{1}{6}[n(n+1)]^2(2n+1)(n^2+n+2).$$

(II.) Sum of series $= 4 + 20 + 60 + 136 + 260 \ldots\ldots$ (i.),

difference of series $= 2 + 8 + 18 + 32 + 50 \ldots\ldots$ (ii.).

In (i.) the successive order of differences are

16 40 76 124

24 36 48

12 12.

Hence the n-th term is

$$4 + 16(n-1) + 12(n-1)(n-2) + 2(n-1)(n-2)(n-3) = 2n^3 + 2n.$$

In (ii.) the successive orders of differences are

6 10 14 18

4 4 4.

Hence the n-th term is $2 + 6(n-1) + 2(n-1)(n-2) = 2n^2$;

therefore the sum of the series (i.)

$$= 2\left[\frac{n(n+1)}{2}\right]^2 + \frac{2n(n+1)}{2} = \tfrac{1}{2}n(n+1)(n^2+n+2)$$

and the sum of the series (ii.) $= \frac{1}{3}n(n+1)(2n+1)$;

therefore product of (i.) and (ii.) $= \frac{1}{6}n(n+1)^2(2n+1)(n^2+n+2)$.

QUESTIONS FOR SOLUTION.

15498. (G. H. Hardy, M.A.)—Prove that the reciprocal of the product of two determinants is the product of their reciprocals.

15499. (Lt.-Col. Allan Cunningham, R.E.)—Let N = 111...1 consist of q^n units in the scale of $r^m = mq + 1$, q being prime; then $N = Mq^n$.

15500. (Professor E. B. Escott.)—Find two large consecutive numbers ($> 10^{14}$) all of whose prime factors are less than 100, *e.g.*:

$a^2 = 7534241^2 = 11^2.13^2.19^2.47^2.59^2$, $a^2 - 1 = 2^6.3^3.5.7^2.31^2.41^2.83$;

$a^2 = 15473809^2 = 13^4.19^2.61^2.79^2$,

$a^2 - 1 = 2^5.3^3.5.7^2.11.17.41.43.47.73$.

15501. (Professor Nanson.)—If $a > b > 1$, and n is a positive integer, prove that

$$\frac{1}{a}\,\frac{a^{n+1}-1}{a^{n-1}-1} > \frac{1}{b}\,\frac{b^{n+1}-1}{b^{n-1}-1}.$$

15502. (Professor Sanjána, M.A.)—The things A are sold 3 for 1d.; the things B, 5 for 2d.; C, 7 for 3d.; D, 9 for 4d.; and E, 4 for 10d. Find how 100 articles, containing things of all kinds A, B, C, D, E, can be bought for 100d.

15503. (Robt. W. D. Christie.)—Prove that the so-called Pellian equation may be reversed by the *dual principle* as follows:—Since

$$(4a^3+6a^2+6a+2)^2 - (4a^2+4a+5)(2a^2+2a+1)^2 = -1$$

for all values of the letter, then

$$(2a^3+6a^2+6a+4)^2 - (5a^2+4a+4)(a^2+2a+2)^2 = -a^6.$$

Give a few other examples, and show how to introduce the prime roots.

15504. (Rev. F. H. Jackson.)—Show

$$\sum_{r=1}^{r=\infty} x^{\frac{1}{2}r(r+1)} = \sum_{r=1}^{r=\infty} \frac{(1-x)(1-x^3)\ldots(1-x^{2r-1})}{(1-x^2)(1-x^4)\ldots(1-x^{2r})}\, x^r.$$

15505. (L. Isserlis.)—If $s_r = \cos^r \frac{1}{15}\pi + \cos^r \frac{3}{15}\pi + \ldots + \cos^r \frac{15}{15}\pi$,

then (i.) $s_2 + s_4 + 7(s_1 + s_3 + s_5) = 0$, (ii.) $3s_2^2 + 16 s_4 s_5 = 0$.

15506. (Professor Neuberg.)—Trouver l'équation aux dérivées partielles des surfaces dont les sections par les plans menés suivant l'axe OZ sont des paraboles de paramètre donné, l'axe de chaque parabole étant dirigé suivant la trace de son plan sur le plan xy.

15507. (Professor Neuberg.)—Un cercle de rayon a se déplace de manière que son centre O parcourt une droite donnée d. D'un point donné A on mène les tangentes AM, AM'. Trouver (1) le lieu des points M, M', (2) l'enveloppe de la droite MM', (3) l'enveloppe des rayons OM, OM'.

15508. (R. F. Davis, M.A.) [Suggested by Mr. C. E. Youngman's Question 15435.]—Three circles touch each other externally and touch externally the circum-circle of a given triangle ABC at A, B, C respectively. Show that their radii are $R/(\cot B + \cot C - 1)$, ...

15509. (C. M. Ross.)—Having given the base and the altitude of a triangle, and that one of the angles at the base is double the other, show how to construct the triangle.

15510. (Rev. T. Roach, M.A.)—Give a proof of the known equality $\tan^{-1}[(i\sin\theta)/i] = \log\tan(\frac{1}{4}\pi + \frac{1}{2}\theta)$, and hence show that $i\tan^{-1} i = \infty$.

15511. (A. M. Nesbitt, M.A.)—If

$$\lambda \equiv a\alpha/l + b\beta/m + c\gamma/n, \quad \lambda' = a\alpha/l' + b\beta/m' + c\gamma/n'$$

be two straight lines intersecting at ω and cutting the sides of the triangle of reference in (a, b, c), (a', b', c'), prove (1) that the four circles Abc, Bca, Cab, ABC meet in a point O, whose co-ordinates are

$$[a/(m-n),\ b/(n-l),\ c/(l-m)];$$

(2) that the point P common to the four circles Abc, $Ab'c'$, $\omega bb'$, $\omega cc'$ has its co-ordinates given by

$$a\alpha/\{ll'\delta K/\Delta - [a^2(B+c)]/L\} = M\beta/Bb = N\gamma/Cc$$

where $\Delta = \begin{vmatrix} ll & mm' & nn' \\ l & m & n \\ l' & m' & n' \end{vmatrix}$, A, B, C are the minors of ll', mm', nn' in Δ,

$\delta = \begin{vmatrix} 1 & 1 & 1 \\ l & m & n \\ l' & m' & n' \end{vmatrix}$, $L = (m-n)(m'-n')$, $M = (n-l)(n'-l')$, $N = \ldots$, and

$K = Aa^2/L + Bb^2/M + Cc^2/N$; and (3) that the points O, O' P, lie on the circle

$$(abc\Delta/LMN)(a\alpha + b\beta + c\gamma)(L\alpha/a + M\beta/b + N\gamma/c) = K(a\beta\gamma + b\gamma\alpha + ca\beta),$$

an equation whose symmetry shows that it passes through Q, R, the respective common points of the circles $(Bca, Bc'a', \omega cc', \omega aa')$ and $(Cab, Ca'b', \omega aa', \omega bb')$.

15512. (R. Tucker, M.A.)—PQ is a chord of a parabola, constant in direction. PR, QR are also chords drawn in a constant direction. Show that the locus of R is a cubic.

15513. (J. Macleod, H.M.I.S., I.S.O.)—Using the usual notation for the ellipse, if at S a perpendicular SD to the major axis is raised equal to SP and in this perpendicular a point E is taken such that SE = AN, prove that the triangle TDE = the triangle ADS. In what case does the tangent PT coincide with TD?

15514. (D. Biddle).—A., starting from the pole of a perfect sphere (of r miles radius), goes in pursuit of B., who is making the circuit of the Equator. Their pace is uniform and equal, but the restriction is laid upon A. that he be always found in the same meridian as B. At what point on the Equator relative to his starting point is B. when A. comes within arm's reach (say, 2 ft.) of him?

15515. (C. H. H.).—The back wheel of a cycle is 30 in. in diameter and is surrounded by a tire 1 in. thick, which has cemented to it a virtually inextensible and non-contracting cover. Where the wheel touches the ground the tire is compressed so as to become only a $\frac{1}{2}$ in. thick. How far does the cycle advance for one revolution of the wheel? [N.B.—Friction is supposed sufficient to prevent slipping.]

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

7609. (R. Russell, M.A.)—Show that, if

$$\xi = d\mathrm{H}/dy + \lambda x, \quad \eta = -d\mathrm{H}/dx + \lambda y,$$

the cubic $(abcd)(xy)^3 = 0$ and all its covariants will be transformed into themselves, where H is the Hessian and λ is determined by $3\lambda^2 + \Delta = 0$.

7623. (D. Edwardes.)—Prove that the tangent to the quadrantal arc of the first negative central pedal of an ellipse making an angle $\tan^{-1}(1-e^2)^{\frac{1}{2}}$ with the minor axis divides the arc into two segments whose difference is equal to the difference of the axes.

8907. (Professor Wolstenholme, M.A., Sc.D.)—The lengths of the three pairs of opposite edges of a tetrahedron are (x, x'), (y, y'),

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(z, z'), and these are connected by the equations $x+x'=2a$, $y+y'=2b$, $z-z'=2c$, where a, b, c are given lengths. Prove that the maximum volume (a function of the *differences only* of a^2, b^2, c^2) of the tetrahedron is

$$\tfrac{1}{72}\sqrt{3}\,[(a^2+b^2-2c^2-\mathrm{K})(2b^2-a^2-c^2+\mathrm{K})(2a^2-b^2-c^2+\mathrm{K})]^{\frac{1}{2}},$$

where $$\mathrm{K}=(a^4+b^4+c^4-b^2c^2-c^2a^2-a^2b^2)^{\frac{1}{2}}.$$

9953. (J. O'Byrne Croke, M.A.)—Regarding the position of a point P as completely defined by the vectoral equation $\rho = a + b(-1)^{\frac{1}{2}}$, in which a and b are the rectangular co-ordinates of P, and $(-1)^{\frac{1}{2}}$ is to be regarded as a symbol denoting transference round a right angle, show how far the convention to be employed in passing from vectors to lines will enable us to give thence a satisfactory demonstration of De Moivre's theorem.

9984. (Professor Gob.)—Soient N_a, N_b, N_c les centres des cercles de Neuberg du triangle ABC. Démontrer que les droites joignant A, B, C aux milieux de N_bN_c, N_cN_a, N_aN_b se coupent sur l'hyperbole de Kiepert et sur la droite joignant l'orthocentre de ABC au centre du cercle de Brocard.

10173. (Rev. T. C. Simmons, M.A.)—Within a given closed convex area a random point is taken, and joined with any point on the perimeter. Show that, if two more random points be now taken in the area, the odds are two to one in favour of their falling on the same side of the line thus drawn. [This is Question 8604, reproposed by Mr. Simmons's desire.]

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss Constance I. Marks, B.A., 10 Matheson Rd., West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, January 14th, 1904.—Dr. E. W. Hobson, Vice-President, in the Chair.

Mr. W. M. Roberts was elected a member.

Miss A. E. Bennett was admitted into the Society.

The following papers were communicated:—

"On various Systems of Piling": Prof. J. D. Everett.

"Electric Radiation from Conductors": Mr. H. M. Macdonald.

"The Notion of Lines of Curvature in the Theory of Surfaces": Dr. G. Prasad.

"Groups of Order p^aq^β": Prof. W. Burnside.

"The Solution of Partial Differential Equations by means of Definite Integrals": Mr. H. Bateman.

"Open Sets and the Theory of Content": Dr. W. H. Young.

"Upper and Lower Integration": Dr. W. H. Young.

"List of Primes of the form $4n+1$ between 10^8 and 10^8+10^3": Dr. T. B. Sprague.

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CLASS LIST

OF CANDIDATES WHO HAVE PASSED THE CERTIFICATE EXAMINATION OF THE COLLEGE OF PRECEPTORS.—CHRISTMAS, 1903.

The list of successful candidates at the Colonial and Foreign Centres will be published in the March number of "The Educational Times."

[*Throughout the following List, bracketing of names implies equality.*]

PRIZES.

General Proficiency.

FIRST CLASS [or SENIOR].

1. Dukes, Miss I. C. (*Isbister Prize.*) — Miss Conder, Milton Mount College, Gravesend.
2. Coombes, C. S. (*Pinches Prize.*) — Mr. Rider, Devonport High School, Stoke.
3. Wheater, S. — Mr. Wheater, Grammar School, Albemarle Crescent, Scarborough.
4. Mercer, R. — Mr. Oakes, Oakes Institute, Walton, Liverpool.

SECOND CLASS [or JUNIOR].

1. Killingback, W. J. — Mr. Clark, Grammar School, Ongar.
2. Barnes, H. — Mr. Hanna, Argyle House School, Sunderland.
3. Purry, W. B. — Rev. J. Turner, Southdown College, Eastbourne.
4. Wynn, H. E. — Rev. Dr. Scott, Mercers' School, Holborn, E.C.

THIRD CLASS.

1. Gibbs, Miss D. — Miss Anstey, Gavine House School, Portsmouth.
2. Leake, Miss S. K. — Private tuition.
3. Gronan, H. E. — Mr. Oakes, Oakes Institute, Walton, Liverpool.
4. Lessels, T. H. W. — Mr. Pratt, New Benwell Council School, Benwell-on-Tyne.

English Subjects.

1. Dukes, Miss I. C. — Miss Conder, Milton Mount College, Gravesend.
2. Howl, Miss F. M. — Mrs. Hiatt, Ladies' College, Wellington, Salop.

Mathematics.

1. Coombes, C. S. — Mr. Rider, Devonport High School, Stoke.
2. Mercer, R. — Mr. Oakes, Oakes Institute, Walton, Liverpool.

Modern Foreign Languages.

1. Tintore, L. — Rev. Brother Attale, St. Joseph's College, Denmark Hill, S.E.
2. Dukes, Miss I. C. — Miss Conder, Milton Mount College, Gravesend.

Classics.

1. Mackwood, J. C. — Rev. Dr. Rendall, Charterhouse School, Godalming.
2. [Not awarded.]

*Natural Sciences.**

1. Mercer, R. — Mr. Oakes, Oakes Institute, Walton, Liverpool.
2. Hampson, R. E. V. — Mr. Hampson, Commercial College, Southport.

Taylor-Jones Prize for Scripture History.

Dukes, Miss I. C. — Miss Conder, Milton Mount College, Gravesend.

Pitman Medals for Shorthand.

1. Wheater, S. (*Silver Medal.*) — Mr. Wheater, Grammar School, Albemarle Crescent, Scarborough.
2. Hogg, R. R. (*Bronze Medal.*) — Mr. Dawes, Bridgnorth Grammar School.

* G. E. Bairsto, Oakes Institute, Walton, Liverpool, was disqualified for the Second Prize for Natural Sciences in consequence of having obtained it at a previous Examination.

The following is a List of the Candidates who obtained the FIRST and SECOND PLACES in each Subject on FIRST CLASS PAPERS.

Scripture History.

1. Dukes, Miss I. C. — Miss Conder, Milton Mount College, Gravesend.
2. Read, Miss E. M. — Miss Atkins, West Ham High School.
   Wheater, S. — Mr. Wheater, Grammar School, Albemarle Crescent, Scarborough.

English Language.

1. Read, Miss E. M. — Miss Atkins, West Ham High School.
2. Dukes, Miss I. C. — Miss Conder, Milton Mount College, Gravesend.
   Holland, C. F. — Private tuition.

English History.

1. Holland, C. F. — Private tuition.
2. Powicke, Miss G. M. — Miss Conder, Milton Mount College, Gravesend.

Geography.

1. Thompson, J. P. — Mr. Yardley, Claughton Collegiate School, Birkenhead.
2. Wetherall, M. L. — Mr. Skey, Cliftonville College, Margate.

Arithmetic.

1. Coombes, C. S. — Mr. Rider, Devonport High School, Stoke.
2. Fry, Miss B. D. — Miss Conder, Milton Mount College, Gravesend.
   Hogg, R. R. — Mr. Dawes, Bridgnorth Grammar School.

Algebra.

1. Read, Miss E. M. — Miss Atkins, West Ham High School.
2. Coombes, C. S. — Mr. Rider, Devonport High School, Stoke.
   Fitter, Miss L. E. — Miss Bowler, Pupil-Teachers' Central Classes, Birmingham.

Geometry.

1. Coombes, C. S. — Mr. Rider, Devonport High School, Stoke.
   Hosegood, P. E. — Mr. Hawe, The High School for Boys, Croydon.

Trigonometry.

1. Coombes, C. S. — Mr. Rider, Devonport High School, Stoke.
2. Deacon, S. — Mr. Hawe, The High School for Boys, Croydon.

Mechanics.

1. Mercer, R. — Mr. Oakes, Oakes Institute, Walton, Liverpool.
2. Dawkins, W. H. — Mr. Thurnham, Borden Grammar School.

Book-keeping.

1. Gaunt, O. — Mr. Gregory-Taylor, Grammar School, Shoreham.
2. Hall, L. E. — Mr. Hawe, The High School for Boys, Croydon.

Mensuration.

1. Bisson, W. G. — Messrs. Davey, Oxenford House, St. Lawrence, Jersey.
   Brown, J. G. — Mr. Slack, Commercial College, York.
   King, L. J. — Mr. Leetham, Northgate School, Winchester.
   Wheater, S. — Mr. Wheater, Grammar School, Albemarle Crescent, Scarborough.

French.

1. Richard, Miss R. M. J. — Private tuition.
2. Bisson, J. R. — Private tuition.
   Tintore, L. — Rev. Brother Attale, St. Joseph's College, Denmark Hill, S.E.

German.

1. Dukes, Miss I. C. — Miss Conder, Milton Mount College, Gravesend.
2. Aveling, Miss G. — Rev. F. W. Aveling, Christ's College, Blackheath.

Italian.

1. Forbes, V. W. — Mr. Thurnham, Borden Grammar School.
2. Jones, Miss M. V. — The Misses Kingston and Mrs. Maples, Church High School, Chepstow.

Spanish.

1. Tintore, L. — Rev. Brother Attale, St. Joseph's College, Denmark Hill, S.E.

Latin.

1. Dukes, Miss I. C. — Miss Conder, Milton Mount College, Gravesend.
2. Edkins, F. J. — Rev. Dr. Scott, Mercers' School, Holborn, E.C.
   Firth, O. W. — Private tuition.

Greek.

1. Mackwood, J. C. — Rev. Dr. Rendall, Charterhouse School, Godalming.
2. Holmes, J. B. — Private tuition.

Hebrew.

1. Jacobi, J. — Mr. Wagstaff, Central Foundation School, Cowper Street, E.C.

Sound, Light, and Heat.

1. Bairsto, G. E. — Mr. Oakes, Oakes Institute, Walton, Liverpool.
2. Ackroyd, A. — Dr. Latham, Thornton Grammar School, Bradford.
   Mercer, R. — Mr. Oakes, Oakes Institute, Walton, Liverpool.

Magnetism and Electricity.

1. Aviss, D. — Mr. Thurnham, Borden Grammar School.
   Dawkins, W. H. — Mr. Thurnham, Borden Grammar School.

Chemistry.

1. Mercer, R. — Mr. Oakes, Oakes Institute, Walton, Liverpool.
2. Beresford, G. W. — Private tuition.
   Vulliamy, B. L. — Private tuition.

Natural History.

1. Comer, Miss W. K. — The Misses Harrington and Miss Boobbyer, Lonsdale House School, Norwich.
2. Sandbrook, Miss O. B. — Mrs. Lawrence, Sunfield House School, Wellington, Salop.

Drawing.

1. Evans, H. A. — Private tuition.
2. Liss, J. W. — Mr. Husband, Bradley High School, Newton Abbot.
   Makin, G. — Mr. Davenport, Kilgrimol School, St. Anne's-on-Sea.

Music.

1. Comer, Miss W. K. — The Misses Harrington and Miss Boobbyer, Lonsdale House School, Norwich.
2. Batty, Miss E. A. — Miss Conder, Milton Mount College, Gravesend.
   Curry, Miss C. M. — The Misses Comfort and Paine, Ladies' College, Seaford.

Political Economy.

1. Cram, Miss E. G. — Mrs. Yarrow, Ellerker College, Richmond.
2. Howl, Miss F. M. — Mrs. Hiatt, Ladies' College, Wellington, Salop.

Shorthand.

1. Wheater, S. — Mr. Wheater, Grammar School, Albemarle Crescent, Scarborough.
2. Hogg, R. R. — Mr. Dawes, Bridgnorth Grammar School.

Domestic Economy.

1. Parks, Miss C. C. — Miss Hanna, West Cornwall College, Penzance.
2. Weever, Miss F. — Miss Sutton, South Croydon College.

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CLASS LIST — BOYS.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively :—

a. = Arithmetic.
al. = Algebra.
b. = Botany.
bk. = Bookkeeping.
ch. = Chemistry.
d. = Drawing.
do. = Domestic Economy.
e. = English.
f. = French.
g. = Geography.
ge. = German.
geo. = Geology.
gm. = Geometry.
gr. = Greek.
h. = History.
he. = Hebrew
i. = Italian.
l. = Latin.
m. = Mechanics.
ma. = Magnetism & Electricity.
ms. = Mensuration.
mu. = Music.
nh. = Natural History.
p. = Political Economy.
ph. = Physiology.
phys. = Elementary Physics.
s. = Scripture.
sc. = Elementary Science.
sd. = Sound, Light, and Heat.
sh. = Shorthand.
sp. = Spanish.
tr. = Trigonometry.
z. = Zoology.

The small figures [1] and [2] prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses, Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, End. = Endowed, Found. = Foundation, H. = House, Inst. = Institute, Int. = International, Inter. = Intermediate, Prep. = Preparatory, S. = School, Tech. = Technical, Univ. = University.

FIRST CLASS [or SENIOR].

Honours Division.

Coombes, C.S. *a.al.gm.ch.sh.* Devonport High S., Stoke
Wheater, S. *s.e.h.bk.ms.sh.* Gram. S., Scarborough
Mercer, R. *s.a.al.m.sd.ch.* Oakes Inst., Walton
Dawkins, W.H. *a.m.ma.ch.* Borden Gram. S.
Smith, R.H. *s.ch.* Bridgnorth Gram. S.
Deacon, S. *a.f.* High S. for Boys, Croydon
Skelton, N.P. *a.bk.* Jersey Modern S.
Bairsto, G.E. *sd.ch.* Oakes Inst., Walton
Tintore, L. *f.ge.sp.* St. Joseph's Coll., Denmark Hill
Hall, L.E. *a.al.bk.* High S. for Boys, Croydon
Hogg, R.R. *s.a.f.sh.* Bridgnorth Gram. S.
Wetherall, M.L. *g.* Cliftonville Coll., Margate
Kenner, T.W. *a.al.* High S., Brentwood
Wallond, W. *a.* Deal College
Birmingham, E.A. *g.d.* Herne H., Cliftonville
Oyston, G.D. *ch.d.* Friends' S., Saffron Walden
Westcott, V.R. *ch.* Bridgnorth Gram. S.
Diplock, T.G. *a.al.bk.f.* High S. for Boys, Croydon
Hosegood, P.E. *gm.* High S. for Boys, Croydon
Browne, G.L. *f.* Private tuition
Ackroyd, A. *s.d.* Thornton Gram. S., Bradford
Lovell, A.G.H. *e.ch.* Private tuition
Dowell, R.S. *bk.* St. John's Coll., Green Lanes, N.
Irens, A.K. *ch.* Bridgnorth Gram. S.
Ferraro, H. *al.sh.* Devonport High S., Stoke
Edkins, F.J. *e.ge.l.* Mercers' S., Holborn, E.C.
Frazer, W.M. *a.ch.* Oakes Inst., Walton
Whipp, L.H. Haringey Park S., N.
Hockin, F.W. Oxenford H., Jersey
Watson, F.E. *s.h.bk.* Loughton School
Horn, A.C.R. *s.a.* Loughton School
Dinnis, L. Dunheved Coll., Launceston
Walker, S.N. *ma.ch.* Technical Day S., Walsall
Gaunt, O. *bk.* Grammar S., Shoreham
Hampson, R.E.V. *ma.ch.* Comm. Coll., Southport
Wigmore, A.J.C. Private tuition

FIRST CLASS [or SENIOR].

Pass Division.

Snow, C.F. *f.d.* Barton S., Wisbech
Pledge, H. *a.ch.* Devonport High S., Stoke
Dunne, W. *d.* High S., Torquay
Jones, H.A. *e.* Mercers' S., Holborn, E.C.
Aviss, D. *ma.ch.* Borden Gram. S.
Beadsworth, G. Dunheved Coll., Launceston
King, L.J. *g.al.ms.* Northgate S., Winchester
Ludlam, T.R. Christ Church Hr. Grade S., Southport
Holland, C.F. *e.h.* Private tuition
Barker, H. *a.al.* Wolverley Gram. S.
Holder, H. *a.* Christ's Coll., Blackheath
Rothery, H. *a.* Victoria Coll., Congleton
Wilkinson, K.D. *ch.* Private tuition
Fletcher, A.J. Kendrick Boys' S., Reading
Beresford, G.W. *ch.* Private tuition
Budgen, J.P. Borden Gram. S.
Sparks, L.B. *ch.* Borden Gram. S.
Tonkin, S. Oakes Inst., Walton
Towerton, H.J. *sh.* Kendrick Boys' S., Reading
DeBourcier, H.A. Jersey Modern S.
Thomas, J.H. Dunheved Coll., Launceston
Howell, H.G. *g.bk.sh.* Private tuition
Buckeridge, F.C. Elmhurst S., Kingston-on-Thames
Doidge, R.M. *al.* Dunheved Coll., Launceston
Maynard, H.C. *g.* Ashford Gram. S.
Powell, T. Tutorial S., Penarth
Thompson, J.P. *g.* Claughton Coll., Birkenhead
Bisson, W.G. *ms.f.* Oxenford H., Jersey
Brain, C.H. Private tuition
Gooderidge, T.W.W. *s.* University College S., W.C.
Morris, D.M. *g.* Northgate S., Winchester
Attewell, O.H. *ch.* Bourne Coll., Quinton
Brown, J.G. *a.ms.* Comm. Coll., York
Shoosmith, A.G. *ge.* Lucton S., Herefordshire
Harris, E.H. *ma.* Borden Gram. S.
Joyner, R.A. *ch.* The College, Clevedon
Liss, J.W. *d.* Bradley High S., Newton Abbot
Purkis, G.S. Wolverley Gram. S.
Adair, E. Friends' S., Wigton
Cairns, J.G. Ashford Gram. S.
Davidson, O.F. Elmfield Coll., York
Cahen, C.B. *bk.* St. John's Coll., Green Lanes, N.
Dickinson, J.N. Friends' S., Saffron Walden
Harper, C.A. Victoria Coll., Congleton
Northorp, F. *d.* St. Martin's Gram. S., Scarborough
Goodwin, E.St.G.S. *e.ch.* Private tuition
Payn, L. High S. for Boys, Croydon
Derry, W.R. Christ Church Hr. Grade S., Southport
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Green, J.W. Friends' S., Saffron Walden
Labey, L.J. *bk.* Oxenford H., St. Lawrence, Jersey
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Barnard, S.G. *a.* Gram. S., Seven Kings
Jacobi, J. *ge.he.* Central Foundation S., Cowper St., E.C.
Hunter, H.C.A. *s.d.* Gram. S., Streatham, S.W.
Metcalfe, A.T. High S. for Boys, Sutton
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Jacobs, C.V. Collegiate S., Bournemouth
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Bunt, F.H. Dunheved Coll., Launceston
Rudd, J. Chaloner's S., Braunton
Cortazzi, M. High S. for Boys, Croydon
Colson, F.C. Loughton School
Evans, H.A. *d.* Private tuition
Panes, A.H. *g.d.* Private tuition
Grice, S.W. Colebrook H., Bognor
Applebe, E.W. *ch.* Eastman's Royal Naval Acad., Winchester
Scarffe, G.F. *d.* Clapham Coll. S., Gauden Rd., S.W.
Patrick, W.S. *ch.* Private tuition
Renouf, D. *al.* Oxenford H., Jersey
Marchbank, F.F. Mercers' S., Holborn, E.C.
Mellows, A.J. *al.* High S. for Boys, Croydon
Morris, F.J. Gram. S., Shoreham
Heward, J.F. High S. for Boys, Croydon
Murphy, F.D. Westminster City S., S.W.
Batt, W.E. *d.* The High S., Devonport
Lyall, H.L.V. *bk.* Comm. Coll., York
Redhead, J.F. Elmfield Coll., York
Firth, O.W. *l.* Private tuition
Tait, A. Argyle H., Sunderland
Douglass, A. Friends' S., Great Ayton
Robertson, S.B. Mercers' S., Holborn, E.C.
Baty, B.C. Royal Kepier Gr. S., Houghton-le-Spring
Gatfield, E.K. *s.* Cliftonville Coll., Margate
Holzapfel, G.L. High S. for Boys, Croydon
Carr, R.M. *a.* Elmfield Coll., York
Lane, E.M. Private tuition
Woolley, H.C.W. Cliftonville Coll., Margate
Wilde, T. Boys' High S., Iron Bridge
Quant, B.H. Kingsholme S., Weston-s.-Mare
Beaumont, W. Christ's Coll., Blackheath
Makin, G. *s.d.* Kilgrimol S., St. Anne's-on-Sea
Brickell, F.E. *a.* Private tuition
Carpenter, H.J. St. John's Coll., Brixton
Harwood, J.S. *bk.* Gram S., Shoreham
Hitchman, F.H. Trafalgar H., Lee-on-the-Solent
Thornley, H.V. *s.* Cliftonville Coll., Margate
Tombs, W.D.R. *s.h.* Holmwood H., Hampstead, N.W.
Wright, B. Kendrick Boys' S., Reading
Moore, R. Albert H., Carlisle
Foster, H.O. Loughton School
Leach, J. Arnold H., Blackpool
Mager, L.A. Mercers' S., Holborn, E.C.
Carpenter, A. St. John's Coll., Green Lanes, N.
Hill, W.T. Victoria Coll., Congleton
Mitchell, W.H.S. 22 Kensington Crescent, W.
Swan, D.B. Sandwich School
Emery, B.J. *d.* Modern S., Lowestoft
O'Connor, J. Private tuition
Rowse, W.H. Chaloner's S., Braunton
Colebrook, A.E.N. *ms.* Jersey Modern S.
Tucker, A. Grosvenor Mount S., Scarborough
Beeson, F.G. Broomy Hill Acad., Hereford
Reid, D.A. Private tuition
Vulliamy, B.L. *ch.* Private tuition
Jabes, F.F. Great Ealing S., Ealing
Brown, G.R. Northgate S., Winchester
Jelf, B.F.M. Lucton S., Herefordshire
Rowlands, S. Tutorial S., Penarth
Cleminson, P.C. King James I. Gram. S., Bishop Auckland
Leonard, A.W. St. Joseph's Coll., Denmark Hill
McCallum, D. Gram. S., Streatham, S.W.
Agnes, J.P. Jersey Modern S.
Falkner, J.W. High S. for Boys, Croydon
Mackwood, J.C. Charterhouse S., Godalming
Phillips, N. Friends' S., Great Ayton
Snowball, H.W. Argyle H., Sunderland
Stedman, P.H. Private tuition
Wallis, H. Private tuition
Troup, B. Friends' S., Gt. Ayton
Ancell, F.N. Gram. S., Streatham, S.W.
Evans, J.B. Gram. S., Shoreham
Howell, B.C. St. John's Coll., Green Lanes, N.
Neill, A.J. Private tuition
Newton, T.A. Southampton Boys' Coll. and High S.
Rawcliffe, L.H. Private tuition
Sinclair-Stevenson, D.E. Private tuition
Milne, H. Victoria Coll., Congleton
Smethurst, R.R. Private tuition
Du Jardin, F.G. Jersey Modern S.
Long, J.I. Kendrick Boys' S., Reading
Mace, C.P. Gram. S., Taplow

SECOND CLASS [or JUNIOR].

Honours Division.

Killingback, W.J. *a.bk.* Gram. S., Ongar
Todesco, J. *ch.* St. Paul's S., West Kensington
Barnes, H. *a.al.f.* Argyle H., Sunderland
Purry, W.B. *a.al.f.d.* Southdown Coll., Eastbourne
Wynn, H.E. *g.* Mercers' S., Holborn, E.C.
Henson, G.W. *a.al.bk.d.* Deacon's S., Peterborough
Grantham, G.H. *g.a.al.ch.* St. Dunstan's Coll., Catford
Laurence, W.H. *f.ch.* St. Dunstan's Coll., Catford
Brindley, J.W. *a.al.* Queen Elizabeth's Gram. S., Ashbourne
Ellis, D.G. *a.f.* Private tuition
Jordan, E.J.S. *al.* Oakes Inst., Walton
Greener, A.S. *al.* Oakes Inst., Walton
Horrocks, G.B. *al.d.* Private tuition
Howe, E. *f.* Northern Polytechnic Day S., N.
Keen, J. *a.al.ch.d.* St. Dunstan's Coll., Catford
Webber, V.R.J. *bk.ms.* Coll. S., Bridgwater
Kedge, S.W. *al.bk.* Clapham Coll. S., Gauden Rd., S.W.
Levy, M. *al.ch.* Central Foundation S., Cowper St., E.C.
Hopton, G.A. *a.al.ch.* Wolverley Gram. S.
Brenton, W.P. *a.al.d.* Mercers' S., Holborn, E.C.
Clark, F.W. *a.al.ch.* Avenue H., Sevenoaks
Cumine, G.F. *a.bk.d.* Gram. S., Shoreham
Gow, J.S. *a.al.ch.* Elmfield Coll., York
Hinton, G.S. *a.al.* Mercers' S., Holborn, E.C.
Mills, C.K. *al.ch.* Avenue H., Sevenoaks
Stevenson, J. *a.al.* Hindley Gram. S.
Almond, W. *al.* Farnworth Gram. S.
Cassidy, P.S. Mercers' S., Holborn, E.C.
Gladden, K.R. *a.* Bracondale S., Norwich
Moore, W.M. *al.ch.sh.* Wolverley Gram. S.
Preece, J.F. *a.al.f.ge.d.* Stoke Newington Gram. S.
Sasse, P.R. *d.* Mercers' S., Holborn, E.C.
Wilson, A. *ch.* Borden Gram. S.
Laird, W.B. *ch.* Manor H., Clapham
Purry, H.B. *f.d.* Southdown Coll., Eastbourne
Seys, S.A. *a.ch.* Clairville S., Ross-on-Wye
Williams, H.L. *a.al.* Kendrick Boys' S., Reading
Wooster, R.J. *l.gr.* St. Paul's S., West Kensington
Needell, B. *a.d.* Mercers' S., Holborn, E.C.
Lawton, H.F. *a.ch.* Technical Day S., Walsall
Collins, J. Northern Polytechnic Day S., N.
Gourvitch, I. Central Foundation S., Cowper St., E.C.
Hatch, H. *bk.ch.d.* Christ Church Hr. Grade S., Southport
Osborn, S. *a.* Argyle H., Sunderland
Staley, R.C.W. Colebrook H., Bognor
Warriner, A.N. Loughton School
Bland, A.J. *a.al.bk.* Deacon's S., Peterborough
Mundy, R.P. *al* Kingsholme S., Weston-s.-Mare
Winnard, J. *a.al.f.* Hindley Gram. S.
Botting, R.C. Avenue H., Sevenoaks
Watson, W. High S., Brentwood
Westrop, W. Bridgnorth Gram. S.
Ball, S.H. *ma.ch.d.* Technical Day S., Walsall
Dew, F.A. *al.ch.* Oakes Inst., Walton
Baudains, A., LaC. *a.* Jersey Modern S.
Cookman, O.L. *a.al.* Mercers' S., Holborn, E.C.
Stack, B.F.R. *d.* Mercers' S., Holborn, E.C.
White, H.G. *f.* Mercers' S., Holborn, E.C.
Reynolds, F. *ma.ch.d.* Private tuition
Rosen, V. *ch.* Whitechapel Foundation S., E.
Beedle, W.T.K. St. Olave's & St. Saviour's Gram. S., S.E.
Hay, W.G. *h.d.* Mercers' S., Holborn, E.C.
Massey, A.W. *ch.d.* Technical Day S., Walsall
Mitchell, W. Argyle H., Sunderland
Williams, J.P. *ch.* Private tuition
King, S. *a.* Wirral Coll., Hoylake
Richards, R.S.H. *f.ge.d.* Stoke Newington Gram. S.
Brown, C.E. *al.* Comm. Coll., Southport
Currie, G.H.N. *a.bk.* Private tuition
Lill, T. *ch.d.* Barton S., Wisbech
Woodford, P.A.J. *a.al.* Northern Polytechnic Day S., N.
Dean, G.T. St. John's Coll., Green Lanes, N.
Law, E.A. *al.f.d.* Hindley Gram. S.
Maguire, F.V. *a.* Guernsey States Inter. S., Guernsey
Freeman, P. Hindley Gram. S.
Hart, W.S. Burgess Hill High S.
Hollick, P.H. *bk.* Wilsford H., Devizes

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BOYS, 2ND CLASS, HONS.—*Continued.*

Jabavu, D.
African Training Inst., Colwyn Bay
Ritchie, F.C.e.a. HighS., Newcastle, Staffs.
Young, V.A. *bk.* Argyle H., Sunderland
Harris, W.J. Wadham S., Liskeard
Malkinson, J. *al.d.*
Central Foundation S., Cowper St., E.C.
Ramsden, L.B. *f.ge.*
The Western Coll., Harrogate
Stygall, S.C. Deacon's S., Peterborough
Appel, M. *al.phys.ch.*
Central Foundation S., Cowper St., E.C.
Caddy, F.G. *d.* Cliftonville Coll., Margate
Hall, S.R. Redenhall Comm. S., Harleston
Hawes, E.E. Upper Hornsey Rise High S., N.
Wilson, E.R. *al.ga.d.*
Deacon's S., Peterborough
Ash, R.G. *a.* Private tuition
Denman, D.W. *al.*
Trafalgar H., Lee-on-the-Solent
Harley, A.L. *a.* Crossley & Porter S., Halifax
Kosoboski, B *a.al.*
Central Foundation S., Cowper St., E.C.
Hookey, A.T. *bk.* St. Leonards Coll. S.
Rosenberg, A. *phys.*
Central Foundation S., Cowper St., E.C.
Symonds, S. High S., Brentwood
Harrison, H. *a.al.f.* Clark's Coll., Brixton
Stanton, E.R. *bk.* Towcester School
Lee, J.A.R. *a.ad.* Private tuition
Barlow, R.H. Hindley Gram. S.
Hutchinson, E.C. *d.*
Deacon's S., Peterborough
Patchett, R. Crossley & Porter S., Halifax
Coulson, E.T. Gram. S., Scarborough
Latham, G.
St. Olave's & St. Saviour's Gram. S., S.E.
Bliss, A. *bk.sh.* Hatfield Coll. S.
Crook, H.A. *al.d,*
Battersea Polytechnic Science S.
Eccleshall, G.B. Farnworth Gram. S.
Marshall, W.T. *phys.ch.d.*
Technical Day S., Walsall
Barnsley, H.B. *d.* Halesowen Gram. S.
Corre, A. *ch.* Whitechapel Foundation S., E.
Kirstein, R.H. *ma.* Borden Gram. S.
Wainwright, D. Private tuition
Cooper, L.K. *al.f.* Private tuition
Eckersall, J.W. *a.* Farnworth Gram. S.
Fluck, C.G. Stoke Newington Gram. S.
Martin, R.T. Private tuition
Powis-Jones, H. *bk.* Deal College
Wardley, M.E.
St. Olave's & St. Saviour's Gram. S., S.E.
Barnes, J.J.
Sir Walter St. John's S., Battersea
Couche, J.A. Mt. Radford S., Exeter
Hutchin, L.T. *g.* Loughton School
Tiffin, J.H. Albert H., Carlisle

SECOND CLASS [or JUNIOR]. Pass Division.

[1]Forbes, V.W. *ch.* Borden Gram. S.
[1]Maitland, J.P. High S. for Boys, Croydon
[1]Bisson, J.R. *f.* Private tuition
[1]Charlton, C.C. Argyle H., Sunderland
[1]Reeve, E.R. Elmfield Coll., York
[1]Manbey, B.F.
Crompton S., Southend-on-Sea
[1]LeSueur, J. Jersey Modern S.
[1]Peat, A.F. Broomy Hill Acad., Hereford
[1]Blake, L.S. *sh.* Comm. Coll., Richmond
[1]Flytten, D.T.D. Borden Gram. S.
[1]Cochrane, D.T.
St. John's Coll., Green Lanes, N.
[1]Phillips, W.S. Gram. S., Shoreham

Bateman, H.B.H. Gram. S., Cowes
Few, A.W. *bk.* Wilsford H., Devizes
Lees, H. *al.ch.* Technical S., Stalybridge
Le Sauvage, C. *al.* Jersey Modern S.
Neale, C.D. The College, Clevedon
[1]Winter, N. Arnold H., Blackpool

Allwright, C.A.J.
Kendrick Boys' S., Reading
Attwell, A.F. *ch.* Private tuition
Barkes, P. *a.* Argyle H., Sunderland
Barkes, W. Argyle H., Sunderland
Cannon, J.F.
Queen Elizabeth's Gram. S., Ashborne
Clark, A.C. *d.* Mercers' S., Holborn, E.C.
Epstein, A.
Central Foundation S., Cowper St., E.C.
Hobbs, F.W. Eton H., Southend-on-Sea
Lambert, D. Kingswood S., Bath
Loomes, A.E. *al.*
Addey and Stanhope S., New Cross, S.E.
Oliphant, F.M. *l.* Private tuition
Ostravitch, H. *a.al.*
Central Foundation S., Cowper St., E.C.
Reader, E.T. *al.*
Woolwich Polytechnic, S.E.
Smith, F.W. Bourne Coll., Quinton
Stephens, F.H. *bk.* Wadham S., Liskeard

[1]Channer, J.A.A. Carter H., Deal
Cowlin, H. *a.* Park H., Broadstairs
Goudie, W.J. *al.* Kingswood S., Bath
Hillier, S.N. Gram. S., Devizes
Maunder, L.T. Lapford Coll. S.
Mundy, J. KingsholmeS., Weston-s.-Mare

[1]Wroth, J.B.
Kingsholme S., Weston-s.-Mare

Fell, W.T. Elmfield Coll., York
Hagger, S.H. *bk.* CliftonvilleColl., Margate
Morris, H.E. *ch.* Technical DayS., Walsall
Parnwell, E.S. Mercers' S., Holborn, E.C.
Reynolds, D. *f.*
Upper Hornsey Rise High S., N.
Salter, B.C. *a.al.* Private tuition
Simmons, C.F. Burgess Hill High S.
Stockwell, V.G. Mercers' S., Holborn, E.C.
Toynbee, G.A. *ch.*
Duncan H., Gt. Yarmouth
Woodruff, C.R. Private tuition

Airth, O.F.D. *ch.* Private tuition
[1]Amos, R.B. The Commercial S., Stretford
Bobby, A.S. Cliftonville Coll., Margate
[1]Crowther, T. Arnold H., Blackpool
Curnock, G.L. Private tuition
Filleul, J. Jersey Modern S.
[1]Holmes, J.B. Private tuition
Hunter, G.F.
Clapham Coll. S., Gauden Rd., S.W.
Jolliffe, D.W. Wilsford H., Devizes
Jones, C.G. Gram. S., Wallington
Lee, F.H. Crossley & Porter S., Halifax
Thomson, A.A.
St. Olave's & St. Saviour's Gram. S., S.E.
Wombell, I. *a.al.* George Green's S., Poplar

Oliphant, L. *bk.* Albert H., Carlisle
Smeed, E. St. Paul's S., West Kensington
Spence, T. Commercial Coll., York.
Williams, P.G. Froebel H., Devonport

Almond, T.H. *a.* Gram. S., Longsight
[1]Desbottes, C.J. St. John's Coll., Brixton
Harvey, M.G. *a.* Private tuition
Hughes, H.S. Kingswood S., Bath
[1]Lait, H.S. Haringey Park S., N.
Mosscrop, E.
Christ Church Hr. Grade S., Southport
Abrahamson, I. *al.*
Central Foundation S., Cowper St., E.C.
Bouchier, W.G. *ch.*
Dr. Morgan's S., Bridgwater
Edginton, W.E. *a.* Gram. S., Devizes
Leeding, W.J. High S. for Boys, Sutton
Matthews, G.D. Bridgnorth Gram. S.
Neild, C.W. Royal Medical Coll., Epsom
Sudweeks, W.R. Wilsford H., Devizes
Symons, D.W. *a.* Gram. S., Shoreham
Vaisey, T.L. Private tuition

Francis, E.
Battersea Polytechnic Science S.
Hudson, W.G. *a.al.*
The Western Coll., Harrogate
Parkinson, S. *a.al.* Atherstone Gram. S.
Patrick, H.A. *a.ch.*
Central Foundation S., Cowper St., E.C.
Quincey, H. *ch.* Barton S., Wisbech
Singleton, G.F. *bk.*
Kilgrimol S., St. Anne's-on-Sea

Barclay, E.E. *al.* Oakes Inst., Walton
Edmans, H.P. Mercers' S., Holborn, E.C.
[1]Pinnick, C.Y. Trafalgar H., Winchester
Reed, V. Coll. S., Bridgwater
Wood, S.B. Mercers' S., Holborn, E.C.

Benest, S.A. Jersey Modern S.
Cashman, H.E.
St. Olave's & St. Saviour's Gram. S., S.E.
Gillam, W.J. *a.*
St. Olave's & St. Saviour's Gram. S., S.E.
Kissack, A. Oakes Inst., Walton
Palmer, L.P.
Alderman Norman's End. S., Norwich
Stretton-Jones, C. HighS. for Boys, Croydon

Curtis, H.A.S. *al.*
Leigh Hall Coll., Leigh-on-Sea
Field-Fisher, C.H. High S., Torquay
Godfrey, G. *ge.* Brunswick H., Maidstone
Hall, H.N. *bk. sh.* Hatfield Coll. S.
Parsons, A.W.C. Wilsford H., Devizes
Read, A.L. *al.* Deacon's S., Peterborough
Wallis, H.G. Eton H., Southend-on-Sea
Wright, W. West Ealing College

Barlow, A.M.
Sedgbrook Rectory, Grantham
Hibberd, A.M. Wolverley Gram. S.
Hindle, W.L. Gram. S., Blackpool
James, T.M. Hillsborough S., Teignmouth
Mattick, A.V. The Coll., Clevedon
Muirhead, A. Jersey Modern S.
Nesham, E.W. High S., Torquay
Ostravitch, I. *a.al.d.*
Central Foundation S., Cowper St., E.C.
[1]Purser, H.O. Lucton S., Herefordshire
Roe, R.H. Kibworth School
Shephard, J.E. Modern S., Southport

Agate, E.C. *a.*
Hardwicke H., Seaford, Sussex
Bryant, J.W. Burgess Hill High S.
Dalladay, H.J. Salway Coll., Leytonstone
Fenning, J.R.K. Private tuition
Guy, H.P. Deal College
Harper, L.N. Sandwich School
Rawlins, W.S. *bk.* Wilsford H., Devizes
Seward, G.F. St. Leonards Coll. S.
Stewart, L.M. Private tuition
Stokes, J.H.M. KendrickBoys'S., Reading
Dunsday, C.R. *ch.* Borden Gram. S

Foxwell, H.S.
Addey & Stanhope S., New Cross, S.E.
[1]Hill, T.R. Gunnersbury S., Chiswick
Lowe, G.O. Kingswood S., Bath
[1]Lush, A.E. Emwell S., Warminster
Medcalf, F.W.
Gosberton Hall S., nr. Spalding
Plowman, L. Mount Hermon S., Woking
Schroter, O.E. *a.al.* Oakes Inst., Walton
Turner, E.J. *s.h.* Hatfield Coll. S.

Brown, A.L. *bk.* CliftonvilleColl., Margate
Humm, P.S. Private tuition
Kenyon, E.A. Gram. S., Blackpool
Larke, A.J. *f.* Stoke Newington Gram. S.
Perrett, W.J.
Kingsholme S., Weston-s.-Mare
Stephens, W.K. Kingsbridge Gram. S.

Danks, P.E. *al.* Halesowen Gram. S.
Hall, C. Private tuition
Henshall, T.H. Whitworth S., Derby
Leese, C. Elmfield Coll., York
Norris, J.W. *d.*
Battersea Polytechnic Science S.
Sharrock, J.H.
Christ Church Hr. Grade S., Southport
Utting, A.V. *ma.ch.*
Technical Day S., Walsall

[1]Birrell, W.F. Private tuition
[1]Brown, E.R. Dunheved Coll., Launceston
Chown, L.G. *ch.*
Kendrick Boys' S., Reading
Clark, S. Albert H., Carlisle
Cowell, A.T. Wolverley Gram. S.
Evans, O.J. *f.* Stoke Newington Gram. S.
[1]Jenkins, A.E.
Northern Congregational S., Silcoates
Mann, D. High S., Torquay
Morris, S.W. *ch.* Oakes Inst., Walton
Phelan, H.G. Mercers' S., Holborn, E.C.
Scarborough, T.W.
Cliftonville Coll., Margate

Conran, E.D.
St. Paul's S., West Kensington
Easton-Cook, A.D. *f.* Gram. S. Shoreham
Ground, T.L. *ma.d.* Barton S., Wisbech
Harvey, J.G. Wolverley Gram. S.
Spain, H.G. *ma.* Private tuition
Sudweeks, E.R. Wilsford H., Devizes
[1]Verver, B.T. Private tuition
[1]Wells, V.J. Gram. S., Scarborough

Booth, S.G. Farnworth Gram. S.
Couche, C.E.H. *d.* Mt. Radford S., Exeter
Fradersdorff, A.J. Private tuition
George, F.H. MoorlandsColl., Westbourne
[1]Hemingway, H.
Friends' S., Saffron Walden
Hewlett, J.B. *bk.* High S., Hastings
McKenna, J.
Central Foundation S., Cowper St., E.C.
Richards, G.A. *d.*
Summerleaze Coll., E. Harptree
Thomas, W.D. *bk.sh*
St. Winifred's S., Torquay
Whelon, C.E. *l.* Private tuition

Baines, N. Stanley H., Cliftonville
Balchin, B.W. *f.* Northgate S., Winchester
Blount, W.S. Merton H., Cliftonville
Coates, W.H. Gram. S., Scarborough
Drew, C. *a.*
St. Olave's & St. Saviour's Gram. S., S.E.
[1]Eyles, H.W. Winchester H., Bristol
Hasler, A.E. *al.* Jersey Modern S.
Hawes, J.G. Crossley & Porter S., Halifax
[1]Hoare, W.S. Berkhamstead School
Howard, G.G. Penketh S., nr. Warrington
Jarvis, A.B. *f.* Steyning Gram. S.
Smith, H. Gram. S., Goole
[1]Soden, A.C.R.
King Edward's Gram. S., Louth
Walmsley, E. Elmfield Coll., York
Watson, D.G. Mercers' S., Holborn, E.C.
Wigg, A.H. High S., Brentwood
[1]Willott, G.F. Mercers' S., Holborn, E.C.

Andrews, H.N. *ma.ch.*
Russell H., Plymouth
Brightman, F.S. Northgate S., Winchester
[1]Fuller, R.F. Private tuition
Ginger, E.J.B. Gram. S., Shoreham
Gross, A. *al.* Whitechapel Foundation S., E.
Hipkiss, A.V. Wolverley Gram. S.
Pritchard, E.F.D. Gram. S., Taplow
Stone, S.H. *bk.* Wilsford H., Devizes
Turner, G.F.
48 Kensington Gardens Sq., W.

Burton, T.H. Comm. Coll., York
Dexter, S.F. Deacon's S., Peterborough
Gooch, H. Gresham's S., Holt
[1]Graves, A.H. Clifton H., Leyton
Harvey, S. Elmfield Coll., York
Sharpe, C.G.K. Gram. S., Wortley-de-Leeds
Sowter, H.V. *ch.d.* Allenby Coll., Derby
Whipp, R. Haringey Park S., N.
Wilson, G. Ellesmere S., Harrogate

Bennett, R.S. de C.
Portland Gram. S., Plymouth
[1]Cheesman, A.E.P. Private tuition
[1]Dulley, H.W. Private tuition
Faulkner, E.G.P.
Cumberland H., Milton-next-Gravesend

Ford, H.J.
Central Foundation S., Cowper St., E.C.
Fulton, T.F.S. *al.*
S. for Sons of Missionaries, Blackheath
Hartley, W.L. Beechen Cliff, Peckham Rye
Mellersh, H.J. Gram. S., Shoreham
Mudd, H.E. *a.bk.* Modern S., Gravesend
Munden, M.M. Warminster Gram. S.
Strange, S.Y. Wolverley Gram. S.
[1]Warde, E.C.D. Private tuition

Anderson, H. Argyle H., Sunderland
Claridge, H.R. Wadham S., Liskeard
Frankland, W. Gram. S., Cowes
Hepworth, C.A.
Crossley & Porter S., Halifax
May, F.C.S. *al.*
Borough Polytechnic Day S., S.E.
[1]Sheaves, H.E. Verulam, St. Albans
Smithson, E.J. Hounslow Comm. Coll.
Williams, C.A. Camden Road Coll. S., N.
Wilson, A.
Queen Elizabeth's Gram. S., Ashborne

Boulden, J. Fern Terrace S., Southborough
Edwards, S.A. Seaford College
Greatorex, H.C. Ashley H., Worksop
Humphries, W.R.B. Portway HighS., Bath
Riddle, N. De Aston S., Market Rasen
Roberts, S.H. Seaford College
Toogood, F.G. Deacon's S., Peterborough
West, T.R. Gram. S., Newton Abbot
Wilkins, V.E. Gram. S., Devizes
Young, E.P. Finsbury Park Coll., N.

Guild, G. *d.* Oakes Inst., Walton
Hall, J.W. Deacon's S., Peterborough
Harris, A.W. King Edward's S., Bath
Hill, E. Private tuition
Martin, E.P. Beechen Cliff, Peckham Rye
Mullins, G.E. The College, Weston-s.-Mare
Rhodes, C.J. *d.* Victoria Coll., Congleton
Rhodes, R.T. *bk.* Loughton School
Sandeford, J.V. Oakes Inst., Walton
Thurnott, F.W. Barton S., Wisbech
Turner, R.D.B. Private tuition
Williamson, F. BrunswickH., Maidstone

Cameron, J.
London Coll., Holloway Rd., N.
Carter, F.A. High S., Torquay
Coope, S. Farnworth Gram. S.
Gee, P. The Commercial Coll., Liverpool
Harris, J.R. Crossley & Porter S., Halifax
[1]Haswell, C.W. Elmfield Coll., York
Hookey, A.R. St. Leonards Coll. S.
Jandron, L. Jersey Modern S.
Parsons, E.S.C. Wilsford H., Devizes
Richards, H.V. *ma.*
Westbourne High S., Paddington
Taylor, J.W. Borden Gram. S.
Watson, A.
Clark's CivilService Coll., ChanceryLane

Allen, A.S. NorthernPolytechnicDayS., N.
Antrum, W.T. Gram. S., Taplow
Bray, A.G. Froebel H., Devonport
Brown, R.W.A. *f.* Private tuition
Dempsey, G.B. *d.*
Crossley & Porter S., Halifax
Foster, W.A. *al.*
King James I. Gram. S., Bishop Auckland
Gaunt, E.H.
St. Olave's & St. Saviour's Gram. S., S.E.
Grindel, R.S.M. Sandwich School
Marks, M.J. 48 Kensington Gdns. Sq., W.
Spalding, A.P. St. James's Coll. S., Jersey
Studd, N.P.J. VictoriaParkS., Manchester
Thornley, J.D. *bk.*
Cliftonville Coll., Margate
Ulcoq, D.A.L. *f.* Private tuition

[1]Cheshire, J.W.
The Commercial S., Stretford
Harrison, G.K. Kingswood S., Bath
Hawkes, C.C. Brunswick H., Maidstone
Jones, B.S. *bk.* The College, Clevedon
Mercer, T. Oakes Inst., Walton
Millard, K. TheCollege, Littlestone-on-Sea
Mumbray, J.E. *ch.*
Central Foundation S., Cowper St., E.C.
Naylor, F.N. Gram. S., Blackpool
O'Beirne, M.H. Wykeham H., Worthing
Pulling, H.W.
St. John's Coll., Green Lanes, N.
Rines, E.T. The College, Scarborough
Rix, E.V. St. Peter's Coll., Westminster
Van Gelder, E.
Northern Polytechnic Day S., N.
Waddington, H.V. Private tuition

[1]Baines, C. Derwent H., Bamford
Clacy, P.J. *sh.* Kendrick Boys' S., Reading
Collet, A.L. Wykeham H., Worthing
Dinnis, A.W. *d.* Avenue H., Sevenoaks
Holt, J.T. Towcester School
James, A.H. Carlyon Coll., Chancery Lane
[1]Rice, R.G. Abingdon School
Shepherd, H.E. Private tuition
Smith, A.H. Wolverley Gram. S.
Thirlby, L.L.
Elmhurst S., Kingston-on-Thames
Vincent, J.R.W. Jersey Modern S.
Way, L.F.K. Private tuition
Webb, L. *f.* Barton S., Wisbech
[1]Chapman, T.J. Holsworthy Middle S.
Clapperton, J.H. King's S., Peterborough
Clarke, N.A. Wolverley Gram. S

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BOYS, 2ND CLASS, PASS—*Continued.*

Clarke, U.H. *d.* Boys' Coll. S., Aldershot
Green, A.P. Private tuition
Hauxwell, H.T. *d.* Burgess Hill High S.
Helliwell, J.P. Private tuition
Moon, H.H. Kingswood S., Bath
Ruderman, L.L. *a.l.* Central Foundation S., Cowper St., E.C.
Spencer, J.R. Mt. Radford S., Exeter
Thompson, G.H. Pupil-Teachers' Centre, Kettering

[1]Atkey, R.H. Private tuition
Brenchley, A.J. Northern Polytechnic Day S., N.
Conton, C.B. African Training Inst., Colwyn Bay
Cooksey, W.M. The College, Clevedon
Davies, C Bridgnorth Gram. S.
Maben, T.M. *l.* Private tuition
Middleton, A. *a.al.* Private tuition
Nisbett, P.F. Central Foundation S., Cowper St., E.C.
Rodda, B.C. Jersey Modern S.
Tibbetts, L. *a.* The College, Snaresbrook

Aitken, J. Old Elvet S., Durham
Beveridge, H.J.C. Commercial Coll., York
Bird, P.G. Wolverley Gram. S.
Booth, J. Farnworth Gram. S.
Clarke, L.K. Arlington Park Coll., Chiswick
Hall, G.N.A. Private tuition
Le Seelleur, L.J. Jersey Modern S.
[1]Masters, A.H. Private tuition
[1]McAllister, A. High S. for Boys, Croydon
Penhale, J.M. Holsworthy Middle S.
Pickering, E.R. St. Leonards Coll. S.
Ritchie, A. Boys' High S., Iron Bridge
Robson, J.A. *ch.* Technical Day S., Walsall
Tilson, J.H. Northgate S., Winchester
Tolchard, F.G. *a.* St. Winifred's S., Torquay
Turner, J.A. Stoke Newington Gram. S.
Wells, E.R. Kendrick Boys' S., Reading

Fryer, B.J. *ch.* Gram. S. Wallington
Jones, T.J.O. Oakes Inst., Walton
Keyse, W.G. Bradley High S., Newton Abbot
Lamb, T.W. British S., St. Helen's, Auckland
Lilly, G.A. St. Paul's S., West Kensington
[1]Locker, J. Gram. S., E. Finchley
[1]Paull, C.W. Wellington Rd. S., Taunton
Prince, C.E.B. Whitworth S., Derby
Redwood, C.C. Summerleaze Coll., E. Harptree
Russell, B.S. High S., Hastings
Shakespeare, W. Wolverley Gram. S.
Tallboy, H.C. Mercers' S., Holborn, E.C.

Baal, G.L. Oxenford H., Jersey
Brown, J.H. *d.* Central Foundation S., Cowper St., E.C.
Cowper, J.F. Victoria Park S., Manchester
Crosby, C.C. St. Joseph's Acad., Kennington Rd., S.E.
Fitch, L.C. Commercial Coll., Acton
Gerrard, L.A. Elmfield Coll., York
Hall, A. Friends' S., Wigton
Sauvage, H.J. St. James's Coll. S., Jersey
Scargill, H.E. Private tuition
Schaeffer, E.D. St. John's Coll., Green Lanes, N.
Smith, A. Gram. S., Ramsey, Hunts.
Weston, C.R. Kibworth School

Chipperfield, H.P. Central Foundation S., Cowper St., E.C.
Harden, C.A. Sandwich School
Hickley, H.V. King Edward VI. Middle S., Norwich
Holroyd, R. The Western Coll., Harrogate
LeQuesne, P. Jersey Modern S.
Longstaff, E.R. Private tuition
Punt, R.F. Oakes Inst., Walton
Turner, E.G. Winchester H., Bristol
Weinstein, H. *a.al.* Central Foundation S., Cowper St., E.C.
White, E. Private tuition

Anderson, G.L. King's Coll., Wimbledon
Buckby, H. Pupil-Teachers' Centre, Kettering
Caplen, A. Central Foundation S., Cowper St., E.C.
Clarkson, W.H. St. Martin's Gram. S., Scarborough
Cunliffe, J. Avenue S., Leigh
Dimes, D.H. Kingsbridge Gram. S.
Haddon, J. Mercers' S., Holborn, E.C.
Morris, F.C.C. Wolverley Gram. S.
Waddington, O. *al.* Private tuition
Walker, S. Gram. S., Blackpool
Ward, G.H. Friends' S., Great Ayton
Wild, G.K. Private tuition

Carruthers, H.J. Crompton S., Southend-on-Sea
Clark, W.L. Northgate H., Winchester
Edmonds, A.T. Commercial Coll., Acton
Jebson, F. *a.bk.* Commercial Coll., York
Pike, E.C. *d.* Camden Road Coll. S., N.
Waites, J. Penketh S., nr. Warrington
Armitage, H.G.P. Private tuition
Hill, A.E. Gram. S., Chorley
Neale, W.E. Private tuition
Seddon, F.R. Farnworth Gram. S.
Walker, H.C. Royal Gram. S., Newcastle-on-Tyne
Weedon, H.S. *al.* Highbury Park S., N.
Williams, C.G. Hazelcroft, Weston-s.-Mare
Wilson, O.R.L. High S. for Boys, Croydon

Bettinson, C. *d.* Barton S., Wisbech
Boyland, A.G. *al.* Coll. S., Bridgwater
Burger, H. *a.* Talbot H., Old Trafford
Ellis, F.R. Gram. S., Blackpool
Jameson, A.C. Modern S., Gravesend
Lee, J.H. Albert H., Carlisle
Mumford, P.S. Barton S., Wisbech
[1]Vokes, W.W. Trafalgar H., Winchester

[1]Allen, E.P.S. 48 Kensington Gdns. Sq., W.
Baillie, J.H. Friends' S., Gt. Ayton
Baker, M.J.C. Brunswick H., Maidstone
Bettinson, A.N. Hertford County Coll., New Barnet
Brown, N.E. Castle Hill S., W. Ealing
Fletcher, L.W. Gram. S., Shoreham
Hill, D.G. Winchester H., Bristol
Peters, O. African Training Inst., Colwyn Bay
Pidoux, H.T. Central Foundation S., Cowper St., E.C.
Renouf, P.H. Oxenford H., Jersey
Umpleby, L.L. Pierremont Coll., Broadstairs
Unsworth, E. *a.* Private tuition
Wood, J.S. Gram. S., Blackpool

Behrman, M. Townley Castle S., Ramsgate
Bibby, T.M. Private tuition
[1]Dockree, L. Verulam, St. Albans
Dreland, P. High S., St. Helier's, Jersey
Farmery, S.W. *a.* Deacon's S., Peterborough
Grant, R.P. *bk.* Modern S., Gravesend
Gutteridge, B.G. Private tuition
Halfhide, W.W. *bk.* High S., Brentwood
[1]Higinbotham, H. Gram. S., Birkdale
Inskip, F.C Gram. S., Ongar
Johnson, E.H. Duncan H., Gt. Yarmouth
O'Callaghan, R.H.L. Private tuition
Wilkins, S. Burgess Hill High S.

Colyer, C.G. Northgate S., Winchester
Connold, H.T. *d.* High S. for Boys, Croydon
Cothay, H.W. Friends' S., Great Ayton
Crosby, B.A. High S. for Boys, Croydon
Dawson-Smith, C.F. Carlyon Coll., Chancery Lane
Elwin, G.B. Commercial Coll., Acton
Fearnside, J.S. Commercial Coll., York
Fell, K.G. Arlington Park Coll., Chiswick
Froud, F.E. Brunswick H., Maidstone
Harris, I.L. *ge.* Private tuition
Hesse, E.T. High S. for Boys, Croydon
Hubbard, A.E. King Edward VI. Middle S., Norwich
Jacobs, S.L. *he.* Tivoli H., Gravesend
Lomas-Smith, E.V. Southdown Coll., Eastbourne
Norman, W. Private tuition
Owen, J.H. Royal Medical Coll., Epsom
Stansbury, J.N. Gram. S., Shoreham
St. John, L. The Commercial Coll., Liverpool
[1]Thatcher, C. Winchester H., Bristol
Wills, T.E. *bk.* Dunheved Coll., Launceston

Bridgen, S.R. *a.* Onslow H., Battersea Rise, S.W.
Bull, F.B. Beechen Cliff, Peckham Rye
Cole, A.W. Gram. S., Cowes
Dodge, E.V. *a.d.* St. Olave's & St. Saviour's Gram. S., S.E.
Douglas, T. Friends' S., Great Ayton
Maden, W.H. Private tuition
Wallis, S.L. Private tuition

[1]Adams, W.L. Private tuition
Devey, S.H. *al.* Central Foundation S., Cowper St., E.C.
Dorman, A.E. Barton S., Wisbech
[1]Endean, F.C. Private tuition
Fripp, J.T. Private tuition
Grillin, P. Boys' High S., Wareham
Haylow, G.S. King Edward VI. Middle S., Norwich
Hill, J.B. Friends' S., Saffron Walden
Jones, H. Hindley Gram. S.
Moore, A. *d.* Friends' S., Saffron Walden
Wesson, E. Halesowen Gram. S.

Amies, N.G.R. Private tuition
Humby, C.T. Southampton Boys' Coll. and High S.
Jew, R.T. Friends' S., Saffron Walden
North, R.A.P. St. Dunstan's Coll., Catford
Povey, J. Cathcart Coll., Cathcart Hill, N.
Saunders, N.V. Chatham H., Ramsgate
West, V. *ch.* Modern S., Maidenhead

[1]Amor, S. Christ's Coll., Blackheath
Bradridge, W.S. Bradley High S., Newton Abbot
[1]Bushby, G.H. Rye Gram. S.
Collins, H.G. St. Olave's & St. Saviour's Gram. S., S.E.
Cunningham, J.A. Claughton Coll. S., Birkenhead
Goodbody, J. Brunswick H., Maidstone
[1]Holland, E.L. Duncan H., Gt. Yarmouth
Kirby, H.G. *al.* Private tuition
Knowles, R.H. Lancaster Coll., Morecambe
Morrissy, M.I. St. Boniface's Coll., Plymouth
Preston, G.L. Private tuition
Rose, W.G. Private tuition
Taylor, L.W. Kendrick Boys' S., Reading
[1]Turner, M.B. Duncan H., Gt. Yarmouth

Blackstock, F.R. Mercers' S., Holborn, E.C.
Bygrave, P.J.L. Brunswick H., Maidstone
Keys, A.S. *a.l.* Private tuition
Morrison, G.J.F. Kingsholme S., Weston-s.-Mare
[1]Pett, F.M. Private tuition
[1]Stevens, E.H. Winchester H., Bristol
Talbot, R.S. Beverley H., Barnes
Tompkins, O.B. Castle Hill S., W. Ealing

Barry, C.H. *bk.* Gram. S., Shoreham
Behrman, A. Townley Castle S., Ramsgate
[1]Bluett, H.N. Private tuition
Chisam, J.S. Lytham Coll., Lancs.
Ellis, G.S.M. King Edward VI. Middle S., Norwich
Hayward, J. Hall Gate S., Doncaster
[1]Le Lievre, H.F. Jersey Modern S.
Parkes, H.A. *d.* Halesowen Gram. S.
Remington, B.C. High S. for Boys, Croydon
Young, R.J. Kendrick Boys' S., Reading

Clare, H. Farnworth Gram. S.
Cook, G. Private tuition
Daniels, F.K. The College, Tankerton-on-Sea
Dias, A. Private tuition
Ellis, J.H. Private tuition
Faulkner, C.R. Private tuition
Grant, K.G. The Downs, Clifton
Hobson, J.D. Wolverley Gram. S.
Jackson, A. Ashley H., Worksop
Keeney, F.G. Southdown Coll., Eastbourne
[1]Lancaster, C. Heston H., Hounslow
Lyon, W.J. Gram. S., Ongar
Martin, R.C. *d.* Lancaster Coll., Morecambe
McKinlay, F. Gram. S., Chorlton-cum-Hardy
Peters, H. Kingsholme S., Weston-s.-Mare
Rawlings, F. St. Martin's Gram. S., Scarborough
Walker, P.W.B. Belle Vue H., Norwich
Whitehorn, J.T. Elm Bank S., Nottingham
Womersley, S. Bilton Grange S., Harrogate

Anderson, T.F. Springfield Coll., Acton Hill
Bond, G.W.T. King's Coll., Wimbledon
Comissiong, W.C. Private tuition
Hall, R.A. Gram. S., Sale
Taylor, C.J. High S., Brentwood
Wheeler, F.J. Private tuition

Bullivant, E.C. Wolverley Gram. S.
Campbell, G.W. Private tuition
Catterniole, F.J. St. Olave's & St. Saviour's Gram. S., S.E.
Craig, A.H. Central Foundation S., Cowper St., E.C.
Faulkner, C.D. Cumberland H., Milton-next-Gravesend
Foster, T. St. Olave's & St. Saviour's Gram. S., S.E.
Hunt, L. Trafalgar H., Winchester
[1]Oldershaw, W. Private tuition
Pearson, W.H. Manor S., York
Pittard, R.A. Ilminster Gram. S.
Quainton, R.J. Battersea Polytechnic Science S.
[1]Sanger, G.A. Heston H., Hounslow
Sauer, J.G. Central Foundation S., Cowper St., E.C.
Smart, R.S. Deacon's S., Peterborough
Smith, H.M. St. John's Coll., Brixton
Taylor, K.G. Private tuition
Townsend, H.G. Hampton Gram. S.

Abrahams, E.S. Gram. S., Devizes
Albone, S.D. Ivel Bury S., Biggleswade
Couch, H. Wadham S., Liskeard
Fawcett, G.H. Elmfield Coll., York
Hewish, B.F. Wolverley Gram. S.
Kent, J.J. St. Boniface's Coll., Plymouth
Mendoza, M. Central Foundation S., Cowper St., E.C.
[1]Parsons, L.S. Winchester H., Bristol
Wall, S.B. Clyde House S., Hereford
Ward, W. Wolverley Gram. S.

[1]Chippendale, C. Ellesmere S., Harrogate
Comley, L.E. Dunheved Coll., Launceston
Fletcher, N.J. Private tuition
[1]Hoyland, F.W. Lady Manners's S., Bakewell
Long, R.F. Northgate S., Winchester
Turner, W.E. *bk.* St. Winifred's S., Torquay

Brimelow, J. Borden Gram. S.
Caws, S.A. Gram. S., Cowes
Dunning, E.H. *al.* Private tuition
Fell, H. Vicar's Choir S., Hull
Ferguson, A.D. Private tuition
Haighton, A. Kilgrimol S., St. Anne's-on-Sea
Holyoak, E.F. St. Olave's & St. Saviour's Gram. S., S.E.
Mitton, E.G. Froebel H., Devonport
Robinson, C.A. Clyde House S., Hereford
Russell, S.W. *a.* University Coll. S., Gower St., W.C.

Allen, W.F. Central Foundation S., Cowper St., E.C.
Allengame, L. Private tuition
Burstein, M.A. Private tuition
Downes, J.C. King's Coll., Wimbledon
Gough, J. Wolverley Gram. S.
Gray, T.C. Borden Gram. S.
Helliwell, J.H. Wolverley Gram. S.
King, S.M. Elmfield Coll., York
Misdorp, J. Avenue H., Sevenoaks
Smith, H. Gram. S., Shoreham
Sunter, M.C. *d.* Gram. S., Chorlton-cum-Hardy

Coulthard, J. *bk.* Albert H., Carlisle
Freeman, H.J. Commercial Coll., York
[1]Leach, T.H. de B. Bedford H., Oxford
Payne, G.H.S. Private tuition
Pointer, E.W. Sandwich School

Austin, H.G. Wolverley Gram. S.
Bennett, W.G. Gram. S., Shoreham
[1]Bonner, W.P. Private tuition
Grant, H.D. Private tuition
Gunnell, H.D.T. Lucton S., Herefordshire
[1]Hayman, F.J. Winchester H., Bristol
Hickman, C.W. Higher Grade S., Old Hill
Longcroft, H.M. Hertford County Coll., New Barnet
Martin, P. Farnworth Gram. S.
Phillips, P.B. Private tuition
Pidgeon, W.T. *ch.* Central Foundation S., Cowper St., E.C.
Pugh, C.W. Manor H., Clapham
Rees, J.F. Victoria Coll., Congleton
[1]Scott, R.H. St. Paul's S., West Kensington
Taylor, H.G. Stanley H., Cliftonville

Bilton, J.E. Elmfield Coll., York
Clarkson, A.V. Gram. S., Ongar
Cock, T. 38 Tavistock Place, Plymouth
Drane, F.D.S. St. Mark's Upper S., Chelsea
Hollings, G.A. *a.* Stationers' Co.'s S., Hornsey
Hough, G.H. Wigan Institute
Mawdesley, F.A. Gram. S., Sale
Mitchell, J. Friends' S., Great Ayton
Pattinson, W.G. Albert H., Carlisle
Rowe, W.A. Abbey S., Penzance

Barrett, C.W. Kibworth S.
Gwynne-Vaughan, H. Hazelcroft, Weston-s.-Mare
Hill, F.A. Bedford Gram. S.
Holtz, L.A. Townley Castle S., Ramsgate
James, T.A. Hillsborough S., Teignmouth
Murton, A.N. Ellesmere S., Harrogate
Page, J. St. Leonards Coll. S.
Page, S. High S. for Boys, Croydon
Sproston, J. Victoria Coll., Congleton
Wasserman, E. Central Foundation S., Cowper St., E.C.
Weissberg, H. Central Foundation S., Cowper St., E.C.

[1]Gough, H. The Gables, Southampton
Howard, B. Sudbury Gram. S.
Lichtenstein, S. Private tuition
Speed, A.H. Elmhurst S., Kingston-on-Thames
Trevethick, H. Middle Class S., Sheffield
Turner, E.V.B. Bromsgrove School
Ward, C. Higher Grade S., Selby
Wheeler, J.C. Elmshurst S., Kingston-on-Thames

Jago, L.E.G. Gram. S., Newton Abbot
Jordan, W.G. St. Leonards Coll. S.
King, R.T. Sudbury Gram. S.
Sampson, E.S. Balham School
Shutler, R.C. Boys' High S., Wareham
Tate, L.J.V. Private tuition
Wright, F.C. Hounslow Comm. Coll.

Amy, J.C. High S., St. Helier's, Jersey
Benson, J. King Edward's S., Bath
Clitheroe, J.N. Gram. S., Blackpool
Cohen, S. *he.* Tivoli H., Gravesend
Holman, V.H. Private tuition
Merewether, J. Ashley H., Worksop
Stockbridge, N.F. Grammar S., Redditch
West, A.S. Gram. S., Ealing

[1]Ainsworth, W.T. Milton Abbey S., Blandford
Allmond, A. St. Olave's & St. Saviour's Gram. S., S.E.
Beaty, F.A. Sandwich School
Crake, W. Friends' S., Great Ayton
Lazarus, S.L. Central Foundation S., Cowper St., E.C.
Metcalf, E.S. Hymers Coll., Hull
Richardson, J.J. Gram. S., Cowes
Wilson, R.A. Wolverley Gram. S.

Base, H.S. *d.* King Edward VI. Middle S., Norwich
Davis, F.J. Modern S., Woking
Groom, G.W. Private tuition
Hepburn, J.A.W. Private tuition
Kerridge, F.G. Borden Gram. S.
Keyworth, E.R.A. Wolverley Gram. S.
Leigh, F. Gram. S., Chorley
[1]Paget, J.M. Private tuition
Potton, A. Central Foundation S., Cowper St., E.C.
Radway, E.C. Central Foundation S., Cowper St., E.C.
Taylor, F.C. Borden Gram. S.
Webster, P.L.C. Maida Vale School, W.
Westlake, J.V. Froebel H., Devonport
Williams, T.E. Lucton S., Herefordshire

Alford, A.N. Springfield Coll., Acton Hill

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BOYS, 2ND CLASS, PASS—*Continued.*

Baker,E. Gram. S., Ongar
Birch,H. King's S., Bruton
Church,P.W. Gram. S., Ongar
Clench,E.G. Private tuition
Offord,E.P.A. Norfolk Coll., Southsea
Ruben,E. Private tuition
Smyter,C.G. Sandwich School
[1]Teddy,T.E. Arnold H., Blackpool
Walker,J.H. Bishop Vesey's Gr. S., Sutton Coldfield

Bocking,R.G.L. King Edward VI. Middle S., Norwich
Drake,F.J. *ch.* Warwick H., Southsea
Fyffe,A.A. Wesley Coll. Sheffield
Jolliffe,W.D. Holsworthy Middle S.
Karge,H.F. Gram.S.,Chorlton-cum-Hardy
[1]Marshall,E.H. Private tuition
Mathews,R.C. Northern Congregational S., Silcoates
Thorns,H.C. King Edward VI. Middle S., Norwich
Young,T. Ashford H., Birkenhead

Cornish,S.P. Jersey Modern S.
Leigh,R.B. Wolverley Gram. S.
Mills,A.E. Green Park Coll., Bath
Needham,L. Private tution
[1]Plackett,C.H. Private tuition
Stewart,A.V. Belgrave H., Littlehampton
Sydney Davies, H.C. Lucton S., Herefordshire
Wallis,L.E. Halstead Gram. S.

Brown,C.E. Brunswick H., Maidstone
Jopling,F. Friends' S., Wigton
Keer,J.I. Derwent H., Bamford
Rhodes,S. Addington Square S., Margate
Ross,C.D.B. Alton H., Blackheath
Sullivan,L.L.A. Grosvenor S., Bath
Trotter,A. Bell's Gram. S., Coleford, Glos.
Willis,S.J. Friends' S., Saffron Walden

THIRD CLASS.

Honours Division.

[2]Scillitoe,O.*s. e.g.a.al.ch.* Earls Colne Gram. S.
Thorpe,A.O. *e.g.a.bk.d.* Hatfield Coll. S.
Jeune,O.E. *e.h.g.a.qm.* Jersey Modern S.
Aitkens,G.B. *l.d.* Eversley S., Southwold
Buxton,T.K. *e.d.* Christ Church Hr. Grade S., Southport
Pocock,A.V.C. *g.a.qm.* Blue Coat S., Reading
Gronau,H.E. *e.g.a.qm.* Oakes Inst., Walton
Lessels,T.H.W. *e.g.a.gm.d.* NewBenwellCouncilS., Benwell-on-Tyne
Bartlett,H.J. *e.h.a.qm.d.* Blue Coat S., Reading
Fraser,L. *e.g.a.bk.d.* Hatfield Coll. S.
Geall,P.D. *e.g.a.d.* Colebrook H., Bognor
Todd,A. *e.g.a.qm.* NewBenwellCouncilS., Benwell-on-Tyne

Ahier,C.P. *e.g.f.* Jersey Modern S.
Davison,S.L. *e.g.a.d.* NewBenwellCouncilS., Benwell-on-Tyne
Watson,E.L. *e.g.a.* Cliftonville Coll., Margate
Roberts,G. *e.g.bk.d.* Hatfield Coll. S.
Birrell,J.E. *s.e.g.a.qm.d.* NewBenwellCouncilS., Benwell-on-Tyne
Gill,N. *g.f.* Wadham S., Liskeard

Badcock,W.H. *e.a.d.* Taunton School
Gardner,F. *s.e.g.d.* NewBenwellCouncilS., Benwell-on-Tyne
Manning,A.H. *a.* Christ Church Hr. Grade S., Southport
Smith,T.H.W. *g.a.d.* Upper Hornsey Rise High S., N.
Turner,R.A. Kendrick Boys' S., Reading

Bex,F.P. *e.g.a.qm.* Boys'Coll.S., Aldershot
Box,J.H.G. *e.g.gm.d.* BlueCoatS., Reading

Bentley,T.H. *g.a.* Grimshaw Street British S., Preston
Brown,J.J. *e.g.a.gm.d.* Blue Coat S., Reading
Oglesby,F. *e.g.* EnglefieldH., Highbury, N.

Knight,P. *e.g.qm.* Colebrook H., Bognor
LeGros,J.A. *h.g.f.* Jersey Modern S.
Purdom,R. *s.gm.f.* High S. for Boys, Croydon
Robbins,J.W. *e.g.f.* The Cedars, Ealing

Bell,R.H. *g.a.d.* NewBenwellCouncilS., Benwell-on-Tyne
Bush,F.R. *g.a.al.qm.* Johnston Terrace S., Devonport
Godin,R.E. *s.g.a.* Loughton School
Irons,S.C. *e.g.a.* Southdown Coll., Eastbourne
Smith,H.A. *g.* Brunswick H., Maidstone
Smith,S.J. *a.d.* Gram. S., Devizes

Higgs,E.A. *g.a.d.* Brunswick H., Maidstone
Kelly,E. 48 Kensington Gardens Sq., W.
Thornhill,J.F.P *s.g.qm.* Loughton School
Brown,F.W. *e.al.qm.f.* High S. for Boys, Croydon
Marshall,N. *e.g.a.d.* Ashley H., Worksop
Nievergelt,L.R. *a.d.* The Dulwich Hamlet S., S.E.
Nuttall,E.D. *s.e.d.* CliftonColl., Harrogate
Pitkin,W.S. *e.g.a.d.* ColebrookH., Bognor
Stedman,R.G. *s.g.a.* Earls Colne Gram. S.
Tucker,A.R. *e.d.* Chandos Gram. S., Winchcombe

Chittell,S. *e.g.a.f.* Cliftonville Coll., Margate
DeQuetteville,S.N. *e.f.d.* JerseyModern S.
Field,D.E. *g.a.d* Brunswick H.,Maidstone
Gray,W.C.A. *g.* Colebrook H., Bognor
Grimes,S.C. *e.al.* Clapham Coll. S., Gauden Rd., S.W.
Kleiter,F. *e.a.qm.d.* Christ Church Hr. Grade S., Southport
Ross,R.S.D. *e.* Jersey Modern S.
Sycamore,W.A. *g.ch.* Earls Colne Gram. S.
Webb,L.J. *a.al.qm.d.* Crompton S., Southend-on-Sea

Ardley,C. *d.* Friends' S., Saffron Walden
Gibbons,C.M. *g.a.* Colebrook H., Bognor
Keeling,G.G. Parkhurst Coll., Blackpool
Posnett,W.L. *g.a.qm.* Pierremont Coll., Broadstairs
Raddon,C. *a.s.d.* Wilsford H., Devizes
Wyatt,F. *a.d.* Alderman Norman's End. S., Norwich

Arthy,E.B.F. *e.f.* MertonH., Penmaenmawr
Jemmett,R.F. *g.* High S., Worthing
Le Cornu,L.C. *e.a.qm.* Jersey Modern S.
Sparks,C.W. *e.sc.* Borden Gram. S.
Bisson,A.W. *e.h.g.f.* Jersey Modern S.
Brierley,S. *g.a.* King Edward VI. Middle S., Norwich
Crow,C.G. *g.* UpperHornseyRiseHighS., N.
Dry,R. *s.e.g.* St. John's Coll., Green Lanes, N.
Farrell,B.W.F. *s.* Channel View S., Clevedon
Maryan,W.J. *e.g.* Southdown Coll., Eastbourne
Marsden,W.D. Christ Church Hr. Grade S.,Southport
Snowdon,F.S. *e.a.d.* The Dulwich Hamlet S., S.E.

Andrews,R.H. *e.f.* Jersey Modern S.
Atherton,W.W. *g.a.* NewBenwellCouncilS., Benwell-on-Tyne
Blofield,A.J. *d.* King Edward VI. Middle S., Norwich
Bonner,F.W. *e.g.* Earls Colne Gram. S.
Boorman,H. *a.d.* Brunswick H., Maidstone
Hoare,C.E. *f.* Woolston Coll., nr. Southampton
Hutchinson,P.G. Deal College
Lankfer,E.W. *e.a.ma.* BartonS., Wisbech
Mudd,L.S. *g.bk.* Modern S., Gravesend
Pryor,H.L.L. *s.h.g.* WilsfordH., Devizes

Bullen,H.B. *e.g.* Castle Hill S., W. Ealing
Cross,R.B. *a.* High S., Worthing
Franses,J.J. *e.g.* Tivoli H., Gravesend.
Geen,W.H. *e.g.a.d.* Chaloner'sS., Braunton
Hodgson,J. *e.a.* Gram. S., Blackpool
Jones,O.F. *e.g.* Gram S., Wallington
Norris,F.DelaM. *h.a.qm.* Northfield S., Bath
Perfitt,M.E. *e.g.a.d.* King Edward VI. Middle S., Norwich
Stammers,R. *e.g.* Earls Colne Gram. S.
Stanton,W. *bk.* Catholic Coll., Lytham, Lancs.
Vautier,J.G. *f.* Jersey Modern S.

Bradshaw,S.G. *a.* Loughton School.
Crees,A. *g.a.* The College,Weston-s.-Mare
Dewing,R.H. *e.* Eversley S., Southwold
Gubbins,G.V. *g.a.al.d.* Borden Gram. S.
Harvey,J.C. *e.* Borden Gram. S.
Metcalf,H.A. *g.f.* Argyle H., Sunderland
Mugleston,R.W. *a.* Loughton School
Ogden,W. Elmfield Coll., York
Pickthorn,K.W.M. *e.* Westcliffe High S., Poulton-le-Fylde
Ring,J. *f.* De Gresley Lodge, Southsea
Taylor,J. *e.a.a.* NewBenwellCouncilS., Benwell-on-Tyne
Vincent,S.L. *g.* Loughton School
Williams,J.E. *g.d.* Gram. S., Hayle

Bright,R.F. *d.* Deacon's S., Peterborough
Christopher,W.C. *g.* The College,Clevedon
Du Feu,P. *e.d.* Jersey Modern S.
Knight,W.R. *g.* Colebrook H., Bognor
Nuttall,W. Farnworth Gram. S.
Pinch,L.J. *e.a.* Loughton School
Shaw,G.R. *e.g.d.* Colebrook H., Bognor
Shaw,H.N. *e.g.* Crossley & Porter S., Halifax
Turvey,F. *g.f.* Argyle H., Sunderland
Wetherell,T.A. *e.d.* Chandos Gram. S., Winchcombe

Berry,R.B. *e.g.* Bickerton H., Birkdale
Horsefield,C.S.W. *e.g.f.* Littleton H., Knowle, Bristol
Long,M.I. *s.e.* Kendrick Boys' S., Reading
Witherington,A.S. *e.g.* Argyle H., Sunderland

Blamey,P.R. *e.d.* Wadham S., Liskeard
Bundey,P.C. *e.g.d.* Blue Coat S., Reading
Coates,A.E. *e.a.* Modern S., Maidenhead
Frazer,R.F. *s.e.* Oakes Inst., Walton
Priestley,E.C. Kendrick Boys' S.,Reading
Taylor,H.D. *g.a.* Towcester School
Worboys,F.G. *e.g.d.* Hatfield Coll. S.

Eades,R.E. Kendrick Boys' S., Reading
Lansdown,E. *g.a.* Malden College
Massey-Crosse,C. *e.fl.* Warwick H., Southsea
Reed,G. *e.d.* BradleyHighS., NewtonAbbot
Steer,P.G. Taunton School

Ball,F.W. *e.d.* Portway High S., Bath
Beer,G.W. *g.a.* Bradley High S., Newton Abbot
Day,K. *s.e.g.a.al.* Gram. S., Cowes
Heath,T.A. *d.* Sandwich School
Hodgson,J.E. *e.* Whitworth S., Derby
Hogg,H.G. *g.a.* New Benwell Council S., Benwell-on-Tyne
Howard,W.J. *g.d.* Earls Colne Gram. S.
Jacobs,H.S. *e.g.he.* Tivoli H., Gravesend
Marcuson,H. *s.e.d.* Springhaven, Eastbourne
Marstrand,O.J. *g.m.* Anerley College,S.E.
Newbery,S. *g.* Caversham H.,Caversham
Osborne,G.P. *g.a.d.* Westbourne High S., Paddington
Shields,C.W. *a.* Monk Bridge S., York
Strong,A.R. *h.g.* Gram. S., Devizes

Bennett,P.E. *a.qm.* IvelBury,Biggleswade
Biggs,H.F.B. *e.* Wilsford H., Devizes
Cohen,N. Tivoli H., Gravesend
Cooper,J.Y. Whitworth S., Derby
Dipple,J.A. *g.* Loughton School
Gittins,H.N. *e.* Bickerton H., Birkdale
Harvey,W. *a.al.* Brunswick H.,Maidstone
Hatfield,J.C.M. *e.* Anerley College, S.E.
Lappage,P.W. *g.* Modern S., Gravesend
McConnell,P. *g.qm.* Loughton School
Perks,H.A. *a.d.* Wolverley Gram. S.
Ratcliffe,T. *e.* Ashley H., Worksop
Taylor,F. *g.f.* Crossley&Porter S., Halifax
Wheldon,H.J. *g.a.* Oakes Inst., Walton
Wilson,B. *e.d.* Barton S., Wisbech
Woods,H.V. *a.d.* Lytham Coll.

Anderson,J.T. *e.g.* Malden College
Fletcher,H.S. *a.* Coll. S., Bridgwater
Flood,J. *s.e.* Addington Sq. S., Margate
Harper,F.S. *a.* KendrickBoys'S., Reading
Leach,C.E. *e.d.* Lapford Coll. S.
Lightfoot,H.B. *a.d.sh.* ElmfieldColl., York
Loynes,J.R. *s.e.a.* Alderman Norman's End. S., Norwich
Mallinson,R. High S. for Boys, Croydon
Neale,A. *g.a.* Gram. S., Ongar
Nutley,R.W. *al.d.* Northgate S., Winchester
Parker,H. *g.al.* Johnston Terrace S., Devonport
Sampson,W.D. *e.a.d.* Alderman Norman's End. S., Norwich
Spiers,H. *e.l.* Great Ealing S., Ealing
Worsley,J.H. *e.al.* Bickerton H., Birkdale

Abbott,W.N. *e.g.* St. Aubyn's, Woodford Green
Alderson,J. *e.* Argyle H., Sunderland
Ambrose,W. *e.g.a.* Oakes Inst., Walton
Bazell C.C. *a.* Coll. S., Bridgwater
Butler,C.F. *e.* King Edward VI. Middle S., Norwich
Candler,A.E. Brunswick H., Maidstone
Coomar,J. *e.g.f.* Croad's S., King's Lynn
Dear,M.G. *d.* Elmhurst S., Kingston-on-Thames
Foulks,W.H. *d.* Queen Elizabeth's Gram. S., Ashburne
Haywood,A. *d.* Queen Elizabeth's Gram. S., Ashburne
Hearn,N.L. *a.* Towcester School
King,H.W. Brunswick H., Maidstone
Mitchell,A. *g.* Oakes Inst., Walton
Oglesby,L.W. *a.d.* HallGateS., Doncaster
Paling,W.E. *g.* Hove High S.
Pye,R. *d.* Lawn H., Clapham Rd., S.W.
Tongue,E.D. *h.g.* Taunton School
Wheeler,T.L. Bracondale S., Norwich
Yates,F.S. Merton H., Cliftonville

Algar,H. *g.* King Edward VI. Middle S., Norwich
Allen,E. *a.* Hasland H., Penarth
Bates,J. *d.* High S. for Boys, Croydon
Benzimra,S. TowncyCastleS., Ramsgate
Dashwood,J.L. *g.* ModernS., Maidenhead
Goldie,H.A. *d.* Lancaster Coll., West Norwood
Holdich,W.J. Cliftonville Coll., Margate
Lichtenstein,L.M. Gt. Ealing S., Ealing,
Lyon,R.W.S. *a.gm.d.* High S., Brentwood
Neale,F. *s.d.* Deal College
Newbery,W. *g.* Caversham H.,Caversham
Palmer,V.B. *d.* Alderman Norman's End. S., Norwich
Pearson,E. *f.* Broadgate S., Nottingham
Rendell,E.A. *h.g.* Wilsford H., Devizes
Robbins,N.E. *e.a.* Taunton School
Watts,W.K. *f.* Merton H., Penmaenmawr

Baber,E.A. *g.* Stoke Newington Gram. S.
Baker,F.G. *e.a.* Hove High S.
Booth,A.J. *g.bk.* Hatfield Coll. S.
Boucher,J.L. Modern School, Gravesend
Budd,T.L. *e.g.a.* Northgate S., Winchester
Burford,J.A.H. *a.d.* Queen Elizabeth's Gram. S., Ashburne
Cooper,C. *a.f.* Broadgate S., Nottingham
England,J.A. *e.g.* Froebel H., Devonport
Gee,T. *d.* Farnworth Gram. S.
Greatbatch,E.W. *d.* Queen Elizabeth's Gram. S., Ashburne
Manaton,F.H. *e.g.* Chaloner'sS., Braunton
Mohan,L.A. *g.* Oakes Inst., Walton
Osborn,F. Arnold H., Northampton
Potter,W.H. Loughton School
Richards,A.F. *a.al.* Winchester H., Bristol
Shaw,W.J. *f.gc.* Stoke Newington Gram. S.
Sherrard,B. *a.* St. John's Coll., Brixton

THIRD CLASS.

Pass Division.

[2]Brandon,G.N. *al.d.* St. Paul's S., Kensington
[2]Haggarty,R.G. *al.* TheHighS., Devonport
[2]Pollard,H.B.C. *f.* St. Peter's Coll., Westminster
[2]Dolbear,W.T. *ch.* Lord Williams's Gram. S., Thame
[2]Wilkinson,A.A. Kingsbridge Gram. S.
[2]Orr,W.B. *ch.* Friends' S., Wigton
[2]Exton,S.E. *d.* Deacon's S., Peterborough
[2]Bernstein,A. Central Foundation S., Cowper St., E.C.
[2]Bardsley,F.S. Christ Church Hr. Grade S., Southport
Armitage,C.R. *ch.* Private tuition
[2]Beck,W.N. Burgess Hill High S.
[2]Bndgen,W.H. Borden Gram. S.
[2]Fulljames,A. Brunswick H., Maidstone
[2]Sherwood,L.R. Cathcart Coll., Cathcart Hill, N.
[2]Browne,H.M. *d.* Private tuition
[2]Dane,B.T. Woolwich Polytechnic, S.E.
[2]Douglas,C.V. *bk.* Gram. S., Shoreham
[2]Mason,E. *d.* Christ Church Hr. Grade S., Southport
[2]Jones,D. Wadham S., Liskeard
[2]Johnston,W.W. Crossley & Porter S., Halifax
[2]Ledingham,A.C. *ma.* Woolwich Polytechnic, S.E.
[2]Stratton,F.C.G. *ch.* St. Paul's S., West Kensington
[2]Holmes,H. *al.* Cathcart Coll., Cathcart Hill, N.
[2]Betty,A.W. Winchester H., Bristol
[2]Bishop,P. Kendrick Boys' S., Reading
[2]Cox,L.C. Mercers' S., Holborn, E.C.
[2]West,J.M. Wadham S., Liskeard
[2]Baulkwill,E.C.M. Bible Christian Coll., Shebbear
[2]Colthurst,J Private tuition
[2]Linsell,G.D. Halstead Grammar S.
[2]Young,J. *d.* Sir Andrew Judd's Comm.S., Tonbridge
[2]Brougham,C.W. Herne H., Chittonville
[2]Noble,W.D. Private tuition
[2]Tanner,H.N. Northgate S., Winchester
[2]Davies,H.A. Dean Close S., Cheltenham
[2]Jemmett,L.S. *bk.* High S., Worthing
[2]Rigby,R.S.M. *d* Victoria Coll., Congleton
[2]Bellis,H.W. Oxenford H., Jersey
[2]Guttery,N.A. Elmfield Coll., York
[2]Howarth,J.A. *a.* Gram. S., Sale
[2]Pope,A.B. *d.* Gunnersbury S., Chiswick
[2]Borden,S.M. Raleigh Coll., Brixton
[2]Cross,E.G. Kendrick Boys' S., Reading
[2]Davies,H. Holloway Coll., Holloway Rd., N.
[2]Lockyer,B. Brunswick H., Maidstone
[2]Lodge,B.H. Alwyne Inst., Gower St., W.C.
[2]Savage,J.G. Seaford College
[2]Tonjoroff,A. Friends'S.,SaffronWalden
[2]Jones,F.J. Kendrick Boys' S., Reading
[2]McWilliam,A.S. Farnworth Gram. S.
[2]Baker,R. Modern S., Gravesend
[2]Gannon,J.H. Oakes Inst., Walton
[2]Tice,C.H. Farnham Gram. S.
Waller,H.T. Thorne Grammar S., nr. Doncaster
[2]Wenmoth,R.W. Wadham S., Liskeard
[2]Crowfoot,A.R. Private tuition
[2]Hammond,F.B. Argyle H., Sunderland
[2]Machin,L.J.d. Deacon's S., Peterborough
[2]Allen,C.H. Deacon's S., Peterborough
[2]Brown,H.L. *d.* Oxenford H., Jersey
[2]Coffin,R. Oxenford H., Jersey
[2]Taylor,H.W. St. Olave's & St. Saviour's Gram.S., S.E.
[2]Brookes,H.E. St. Dunstan's Coll., Catford
[2]Brookman,W.E. Langharne S., Southsea
[2]Dixon,C.E.G. High S., Brentwood
[2]Hoole,I.S. Wolverley Gram. S.
[2]Boyes,F.S. Deacon's S., Peterborough
[2]Gaitskell,E.R. Crompton S., Southend-on-Sea
[2]Glaister,J. Albert H., Carlisle
[2]Herbert,A.H. Bedford H., Oxford
[2]Hopwell,W.H. *d.* Barton S., Wisbech
[2]Parker,H.S. Clyde H., Hereford
[2]Beere,C.R. Elton High S., Bishopston
[2]Burnham,C. St. James's Coll. S., Jersey
[2]Nickson,J.G. Wolverley Gram. S.
[2]Hunter,T.W. Oxenford H., Jersey
[2]Rhodes,A. Kilgrimol S., St. Anne's-on-Sea
[2]Saunders,C.H. Cambridge H., Bath

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BOYS, 3RD CLASS, PASS—*Continued.*

²King,J.C. Borden Gram. S.
²Logan,J.W.
St. John's Coll., Green Lanes, N.
²Parsell,H.G. Oakes Inst., Walton
²Solly,R. Sandwich School
²White,C.T. *d.* Camden Road Coll. S., N.

²Ashworth,F.G. Modern S., Southport
²Betts,B. Talbot H., Old Trafford
²Galbraith,A. High S., Brentwood
²Gregory,L.
Queen Elizabeth's Gram. S., Ashburne
²Johnson,A.H. Stanley H., Cliftonville
²Record,H.H. Brunswick H., Maidstone
²Shaw-Crisp,C. St. Paul's S., Kensington
²Tozer,A.P. *d.* Friends' S., Saffron Walden
²Hart,H.V. Friends' S., Saffron Walden
²Newton,J. Woolwich Polytechnic, S.E.

²Bryant,W. Winchester H., Bristol
²Green,G. Derwent H., Bamford
²Hoode,D.R. Manor H., Clapham
²Rudge,C.S. Avenue H., Sevenoaks

²Bell,R.A.W. Boys' Coll. S., Aldershot
²Blandy,C.R.B. Gram. S., Sale
²Butlan,H.M. Gram. S., Ongar
²Spurge,S.C. Loughton School

²Brown,A.B. Derwent H., Bamford
²Harwood,J.W. Gram. S., Shoreham
²Holman,J. Mt. Radford S., Exeter
²Lee,J.D. Crossley & Porter S., Halifax
²Rees,T.O. Cowley S., Chichester

²Botwright,H. Deal College
²Daniels,L.M. Belle Vue H., Norwich
²Fox,R. Crossley & Porter S., Halifax
²Hinson,C.A. Heston H., Hounslow
²King,R.N. *ch.*
King Ed. VI. Middle S., Norwich
²McPherson,D.A. Manor S., York
²Shaw,S.A. Crossley & Porter S., Halifax
²Tunnicliffe,H.P. *d.*
Kilgrimol S., St. Anne's-on-Sea

²Dowlen,E.H. Gram. S., E. Finchley
²Pirrie,W.C. Modern S., Gravesend
²Rees,J.V. Victoria Coll., Congleton

²Beare,S.S. Gram. S., Newton Abbot
²Burrell,B.G. Crossley & Porter S., Halifax
²Hughes,W.V.
Lewisham S., Weston-s.-Mare
²Jopling,A.E.
Woolston Coll., nr. Southampton

²Basford,C.
Tettenhall Coll., nr. Wolverhampton
²Bonnett,C.H. Heston H., Hounslow
²Brewer,A.V.
Bradley High S., Newton Abbot
²Griffiths,C.S.C.
Clark's Civil Service Coll., Chancery Lane
²Gye,N.F.
Hertford County Coll., New Barnet
²Hundley,W. Loughton School
²Watson,J.H. High S., Brentwood

²Bell,H. Old Elvet S., Durham
²Bloomfield,H.O. Seaford College
²Cohen,N. Tivoli H. Gravesend
²Crawforth,E.R. Manor S., York
²Edwards,P.G.
The College, Weston-s.-Mare
²Hamilton,W.W.F.
United Kingdom Coll., Lavender Hill
²Kirk,G.E. Leeds Church Middle Class S.
²Walsh,R.S. Private tuition

²Bennett,G.R.
Brynmelyn S., Weston-s.-Mare
²Bowen,S.W. Modern S., Gravesend
²Church,J.J.
Central Foundation S., Cowper St., E.C.
²Curling,D.R.K.
48 Kensington Gardens Sq., W.
²Fieldhouse,E.F. The College, Clevedon
²Leatherby,L.H.
Clark's Civil Service Coll., Chancery Lane
²Mander,A.O. Wadham S., Liskeard
²Owens,J.H. Fauconberge S., Beccles
²Pool,O.E. Gram. S., Hayle
²Stevens,R. Winchester H., Bristol
²Tanner,R.D. High S. for Boys, Croydon
Thornbary,J. Lyt'ham College
²Vivian,R.M. Gunnersbury S., Chiswick
²Wilson,J.W.G. High S. for Boys, Croydon

²Belcher,H. Lewisham S., Weston-s.-Mare
²Hendry,F.W. Oakes Inst., Walton
²Humphries,W.G.
The Western Coll., Harrogate
²Lucas,E.S. Handel Coll., Southampton
²Ransford,L.G. Private tuition
²Scammell,E.W. Winchester H., Bristol

Adams,E. *f.* Deal College
Beeby,H.J. *s.*
Upper Hornsey Rise High S., N.
Burrows,H. *e.* Lytham College
Canham,A.T. Burgess Hill High School
²Charnock,J.P. Private tuition
Chivers,H. *e.g.a.d.* Long Ashton S., Bristol
²Cole,J.H.
King Ed. VI. Middle S., Norwich
Couch,A.G. Brunswick H., Maidstone
²Crang,A. The Grammar S., Ilfracombe
²Crocombe,R.F. Chaloner's S., Braunton
²Eastick,F. Salway Coll., Leytonstone
²Ecob,A.H. Deacon's S., Peterborough
Fielding,T. *a.d.* Lytham College
²Foulkes,R. Mercers' S., Holborn, E.C.
²Grainger,F. Friends' S., Wigton
²Green,J.S. Lancaster Coll., W. Norwood
Haslie,W.A. Modern S., Southport
Keswick,H.G. *f.l.d.* Wyllies, Cuckfield
²Mead,A.M.
St. Olave's & St. Saviour's Gram. S., S.E.
Michael,F.B. *e.a.d.*
Gosberton Hall S., nr. Spalding
²Minet,E.C.T. Castle Hill S., W. Ealing
Potvine,H.A. Brunswick H., Maidstone
²Pratt,W.P. High S., Brentwood
Prismall,F.W. *e.g.*
Kendrick Boys' S., Reading
Purry,C.B. *g.e.*
Southdown Coll., Eastbourne
Roberts,R. *d.* Highfield S., Chertsey
Schofield,G.C. *g.d.* New Coll., Harrogate
Silvester,A.W. *h.g.gm.*
Ashley H., Worksop
²Teulon,A.
Elmhurst S., Kingston-on-Thames
West,A.H. *a.* Modern S., Gravesend
Woolnough,A. The School, Banbury

²Bannon,N.L. Gunnersbury S., Chiswick
²Blakeway,P.E. Lucton S., Herefordshire
Daplyn,G.s. Redenhall Comm. S., Harleston
Griffiths,L.P.
High S., Alsager, Stoke-on-Trent
Hammond,J. *g.*
King Ed. VI. Middle S., Norwich
Le Gresley,A.J. *e.g.f.*
Harleston H., St. Lawrence, Jersey
²Owers,S.A.V.
King Ed. VI. Middle S., Norwich
Perryman,W.J. *e.w.*
Finsbury Park Coll., N.
Ryley,E.B. *e.* Vicar's Choir S., Hull
Slade,H.A. *a.d.* Cranbrook Coll., Ilford
Vergette,T. *g.* Barton S., Wisbech
Watts,L.B. *g.* Colebrook H., Bognor

²Carpenter,S.D. Private tuition
Clark,P.L. *d.* The Douglas S., Cheltenham
Cleaver,F. *a.* Borden Gram. S.
Cranmer,W.O. *g.* Earls Colne Gram. S
²Desborough,R.
Queen Elizabeth's Gram. S., Ashburne
²Forrest,T.H.N. Private tuition
Gardner,W.D. St. Leonards Coll. S.
Gill,W.E. *g.m.*
Pierremont Coll., Broadstairs
Gray,W.A. Delaval Council S., Benwell
²Grugeon,R.T. Halstead Gram. S.
Jode,S.A. *d.* Lancaster Coll., W. Norwood
Koch,K.G. *d.* St. Kilda's Coll., Brighton
Lochner,R.G. *a.* Seaford College
Shaw,A.C. Haringey Park S., N.
Smith,O.H. Southdown Coll., Eastbourne
Stebbings,J.M. *s.f.* Deal College
²Taylor,A.E. Heston H., Hounslow
²Vanderlinde,E.
Northern Polytechnic Day S., N.
²Ward,W.A. Raleigh Coll., Brixton
Wernig,S. *d.* Lawn H., Clapham Rd., S.W.
²Wyatt,J.M. Kendrick Boys' S., Reading

Bell,H.R. Brunswick H., Maidstone
Brooks,A.R.
Upper Hornsey Rise High S., N.
Brooks,L. *g.* Earls Colne Gram. S.
Cotton,C.J. Victoria Coll., Congleton
Edmunds,W. *s.e.* Avenue H., Sevenoaks
²Evans,E.V. The College, Bracknell
Fenwick,C. *a.*
Christ Church Hr. Grade S., Southport
Graham,G.S. *e.a.* Oakes Inst., Walton
²Gruchy,E.R. High S., St. Helier's, Jersey
Jackson,M.K. *e.* High S. for Boys, Croydon
Jermyn-Smith,F. *d.* Ashley H., Worksop
²Keene,J.H. Hove High School
Kent,R.E. *e.d.* Oakes Inst., Walton
Langley,T.F.W. Croad's S., King's Lynn
²Lowe,C.J. St. Boniface's Coll., Plymouth
²Middleton,M. Hall Gate S., Doncaster
Parnell,E. *d.* Linden H., St. John's, S.E.
Pollitt,H. *d.*
Christ Church Hr. Grade S., Southport
²Rugg,D.R. Borden Gram. S.
Saunders,F.E. *g.* Blue Coat S., Reading
²Scarlett,J.W. Mary Street H., Taunton
²Sparks,H.C. Borden Gram. S.
Standley,J.S. *e.d.*
King Edward VI. Middle S., Norwich
Verney,D. *d.*
Crompton S., Southend-on-Sea
²Vine,S.B. Private tuition
²Wheatley,J.H. Salway Coll., Leytonstone
²No. 8561 Private tuition

Abbott,G.H. Loughton School
Anthony,J. *f.* Croad's S., King's Lynn
Applegate,B.F. Portway High S., Bath
Barnes,W.S. Crossley & Porter S., Halifax
Beams,A.L. *gm.* Wolverley Gram. S.
²Bishop,V. High S., Melksham
Burgess,R.W.A. Victoria Coll., Congleton
Cartwright,H.J. *g.* Castle Hill S., W. Ealing
Clarkson,C.W. *a.*
Classical & Comm. S., Preston
Day,C.F. *e.*
King Edward VI. Middle S., Norwich
Dunn,C.S. *a.d.* Sandwich School
²Fisher,J.W. Middle Class S., Sheffield
Groom,H.S. *g.d* Avenue H., Sevenoaks
Heygate,L.W. *a.al.d.*
Highbury Park School, N.
Hockley,A.F. Portway High S., Bath
Hyde,F. *g.* Loughton School
Ingram,O.P. *s.sc.* Wilsford H., Devizes
Johnson,W.S. *a.d.*
Commercial S., Downham Mkt.
²Ling,H.E. Malden College
Macdonald,R.E.R. *g.* Hatfield Coll. S.
²Martindale,A.
Broughton S., Hr. Broughton
²Mayoss,C.N.
Lewisham S., Weston-s.-Mare
Norton,F. Burgess Hill High S.
²Perrin,L.A. Gram. S., Wallington
²Pritchard,F.W.R. Gram. S., Taplow
Shurmur,M.W. *g.*
Cliftonville Coll., Margate
²Somerset,V.E. Private tuition
Thomas,W.W. *d.* Long Ashton S., Bristol
²Webb,F.R. Salway Coll., Leytonstone
²Wigham,T.W. Friends' S., Wigton
Woodroffe,W.G. *g.* Private tuition
²Woodruffe,C.H. King's Coll., Wimbledon

²Baird,F.E. Brancondale S., Norwich
²Baldwin,H. Springfield Coll., Acton Hill
Braithwaite,W.H. *g.* New Coll., Harrogate
Burgis,B. *d.* Duncan H., Gt. Yarmouth
²Burnett,R. Lucton S., Herefordshire
Burney,G.W. *bk.* Cliftonville Coll., Margate
Byrne,H.S. *a.* Brunswick H., Maidstone
Carpenter,B. *e.g.a.* Halesowen Gram. S.
²Chambers,R.P. Herne H., Cliftonville
Clarke,A. Steyne S., Worthing
²Cocks,J.S. Gram. S., Newton Abbot
Cross,L.B. High S., Worthing
Dennison,C.H. Albert H., Carlisle
²Drayson,A.G. Modern S., Gravesend
²Evitt,E. Manor H., Clapham
Gray,M.A. *g.* Collett H., Bournemouth
Hodgson,G.C. Argyle H., Sunderland
²Humphrey,F.N. Private tuition
Jerrard,R. *g.* Addington Sq. S., Margate
Johnson,F.M. *e.f.* Croad's S., King's Lynn
Lane,H. *g.* Deal College
Marsh,E. Academy, Crewe
Maynard,C.G. *d.* Elmfield Coll., York
Monson,C.C. *e.f.* Halstead Gram. S.
²Parry,W.S. High S. for Boys, Croydon
Peat,W.H. *e.d.* High S. for Boys, Croydon
Penny,A.R. *e.* Taunton School
²Quaife,D.W. Hounslow Comm. Coll.
Russell,W. *gm.* The Limes, Croydon
Sauvage,E.H. *d.* St. James's Coll. S., Jersey
²Smart,H.C. Halesowen Gram. S.
Speeding,C.C. *e.d.*
High S. for Boys, Croydon
²Stiller,J.
Central Foundation S., Cowper St., E.C.
²Sumner,J.L. Gram. S., Chorley
²Trantman,R.F.P.
Highbury Park School, N.
Vinden,J.J. *g.* Reading Coll. S.
Watts,F. *g.* Emwell S., Warminster
²Whitaker,N. High S. for Boys, Croydon
²Wilkinson,H.A.
Crossley & Porter S., Halifax

Armstrong,E. *a.d.* Farnworth Gram. S.
Bacon,N.T. *a.d.*
Alderman Norman's End. S., Norwich
Blaxall,K.E. High S., Brentwood
Chabert,H. *d.*
Fern Terrace S., Southborough
Dusart,H.F. *e.* The Gram. S., Lewes
Easton-Cook,W.P. *f.* Gram. S., Shoreham
Frampton,T.C. Eversley S., Southwold
Franklin,H. St. John's Coll., Brixton
Golby,B.T. *g.*
Upper Hornsey Rise High S., N.
Halcrow,E. *q.* Steyne S., Worthing
Hinxman,A.J. *g.* Gram. S., Devizes
²Holliday,A.H. *bk.*
Kilgrimol S., St. Anne's-on-Sea
²Horner,S.B. Camden Road Coll. S., N.
Hossell,F. *d.*
Gosberton Hall S., nr. Spalding
Johnson,A.C. Wadham S., Liskeard
²Kirby,A.G.
King Ed. VI. Middle S., Norwich
Lancaster,F.K. *e.d.*
Bradley High S., Newton Abbot
Littlewood,L.E. Eversley S., Southwold
McMurdy,J.
Christ Church Hr. Grade S., Southport
Mercer,F. *g.a.* Oakes Inst., Walton
²Morrison,E.O. Ellesmere S., Harrogate
Patterson,S. *d.* Boys' Coll. S., Aldershot
Perkins,S.K. *e.*
Kendrick Boys' S., Reading
²Phillips,A.G. Kendrick Boys' S., Reading
Reed,L.N. Froebel H., Devonport
Shuttleworth,R.C.
Christ Church Hr. Grade S., Southport
Spencer,P.S.
Queen Elizabeth's Gram. S., Ashburne
Tham,E.A. *a.* Malden College
Tooley,W.H. *s.*
Ascham Coll., Clacton-on-Sea
²Vyse,F.H. Sandbach School
Watling,H.J.
King Edward VI. Middle S., Norwich
Whitty,R.R. Brancondale S., Norwich
Wontner,H.L.St.J.
Cliftonville Coll., Margate
Young,E.N.G. *s.e.f.* Gram. S., Taplow

Allen,L.I. *g.a.* Derwent H., Bamford
Beall,R.D. The Limes, Croydon
²Chauffourier,V.M.D. *f.* Private tuition
Clark,B.S. *bk.* Taunton School
Clarkson,R.S. Comm. Coll., York
Crees,N. The College, Weston-s.-Mare
²Davis,T.H.C. Sandwich School
Dufty,B.E. *g.d.*
Littleton H., Knowle, Bristol
Edwards,R.F. Maida Vale S., W.
Fellows,S.H. Friends' S., Saffron Walden
²Flower,W.E. Richmond Hill School
²Haigh,J.W. New Coll., Harrogate
Haines,G. *g.* Westfield H., Reading
Honywill,S.J.
Bradley High S., Newton Abbot
Howse,J. *e.g.* Kendrick Boys' S., Reading
Jenkins,W.T. *e.a.*
Kingsholme S., Weston-s.-Mare
Kent,W.B. *d.* Clifford S., Beckington
²Kirkham,H.L.D. Private tuition
Lamb,C.E. *d.* Merton H., Penmaenmawr
Loescher,J.G. Burgess Hill High S.
Longley,G.W. *g.* Elmfield Coll., York
Marchant,R.H. Avenue H., Sevenoaks
Marshall,L.F. Gram. S., Ongar
North,E.G. Southdown Coll., Eastbourne
Palmer,B.G.
Cathcart Coll., Cathcart Hill, N.
Preston-Holt,W.N.
Ellesmere S., Harrogate
²Probyn,B.H. Private tuition
Rogers,E.W. *g.* Brancondale S., Norwich
Salmon,H. *a.* St. Mary's Hall, Cardiff
²Saxton,S. Private tuition
Westbrook,T.M. *d.* Farnworth Gram. S.
²White,A.R. *d.* Private tuition
²Wilde,D. Gram. S., Sale

²Alsly,C.W. Leeds Church Middle Class S.
Adkins,F.S. Towcester School
²Berry,H.A. High S., St. Helier's, Jersey
²Blakey,J. Broughton S., Hr. Broughton
²Boughton,A. Finsbury Park Coll., N.
²Brill,S.W. Gram. S., Wallington
Crinson,T.A. *g* Argyle H., Sunderland
²Dabbs,A.J. Private tuition
Ford,T.W. Seaford College
²French,R.G. High S. for Boys, Croydon
²Hayes,J.R. Croad's S., King's Lynn
How,F.G. *d.* Clifford S., Beckington
Howard,H. Upper Hornsey Rise High S., N.
Jones,W.L. *d.* Private tuition
²Kinch,T.F. High S., Worthing
²Martindale,F. Albert H., Carlisle
Medland,C. *g.a.d.* Lapford Coll. S.
Meers,J.W.
King Edward VI. Middle S., Norwich
Morris,A.F.W. *gm.*
High S. for Boys, Croydon
²Nash,H.J. Private tuition
Nelder,R.C. Taunton School
Newbury,R.A. *e.* Reading Coll. S.
²Outred,H. Modern S., Gravesend
Pethick,L.F. *a.d.* Emwell S., Warminster
²Rutherford,A.H. College, Churwell, Leeds
²Saunders,E.J. Ivel Bary S., Biggleswade
Scott,J.C. King Ed. VI. Middle S., Norwich
²Sharman,O.C. Heston H., Hounslow
Stock,R.A. Private tuition
²Stocker,G.L.T. Victoria Coll., Congleton
²Tees,J. Christ's Coll., Blackheath
Trotter,W.W. Crossley & Porter S., Halifax
Watson,L.J.G.
King Edward VI. Middle S., Norwich
²Willard,A.J. St. Leonards Coll. S.
Wisdom,J.R. Avenue H., Sevenoaks
²Woodhouse,B.W. Albert H., Carlisle

²Adey,F.C. Richmond Hill School
Barrett,H. Kibworth School
Barret,J.D. *e.* Clifton Coll., Harrogate
Batt,F.R. *l.* Mt. Radford S., Exeter
²Blacow,A. Gram. S., Blackpool
Bradridge,N.B.
Bradley High S., Newton Abbot
Dalton,E.N. Oxford H., S. Croydon
Evans,B.C. Cliftonville Coll., Margate
²Gardiner,A.M. King's Coll., Wimbledon
Gibson,A.T. *g.d.* Gram. S., Wallington
²Gosling,C.W.
Bell's Gram. S., Coleford, Glos.
²Griffin,M. Salway Coll., Leytonstone
Hibberd,F. *d.* Clifford S., Beckington
Hinder,L.W. St. Aubyn's, Woolford Green
²Holmes,G. *d.* Barton S., Wisbech
²Homewood,A.N.
Broomwood Coll., Clapham Common
Hutchinson,J. *e.*
Delaval Council S., Benwell
Isaacs,H. *q.* Springhaven, Eastbourne
Jennings,F. *g.* Cranbrook Coll., Ilford
Jolliffe,H.P. *s.a.* Gram. S., Cowes
Krolik,P.D. *e.*
Wykeham H., W. Hampstead
²Martin,C.W. Modern S., Southport
Morris,J.C. Grosmont, Bognor
²Osmar,E.F. The Philological S., Southsea
²Pigott,L.W. Manor H., Clapham
Postlethwaite,L.
Lawn H., Clapham Rd., S.W.
Price,A.W. Bronshill S., Torquay

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BOYS, 3RD CLASS, PASS—*Continued.*

²Wood, F.C. Stationers' Co.'s S., Hornsey
Zoers, F.W. Gram. S., Ongar

Barnes, J.N.
Alderman Norman's End. S., Norwich
Barnett, A.E. *d.*
Th · Douglas S., Cheltenham
Barstow, H. *e.* Ashley H., Worksop
Baxter, B.H. Hall Gate S., Doncaster
²Berger, S.
Central Foundation S., Cowper St., E.C.
Bowhay, R.C. *s.*
Skinners' S., Tunbridge Wells
²Bullock, T.W. Enwell S., Warminster
²Campbell, W.L.
The Western Coll., Harrogate
³Clowes, A.V. Gram. S., Ongar
Ebsworth, T.L.
Kingsholme S., Weston-s.-Mare
²Elwick, R.I. Modern S., Woking
Emms, B.L. St. Leonards Coll. S.
Englefield, R. *e.* Christ's Coll., Blackheath
Fry, J.E. *g.a.* Oakes Inst., Walton
²Greensill, E.
Queen Elizabeth's S., Mansfield
Grice, H.G. Colebrook H., Bognor
²Hewitt, H.E. Gram. S., Margate
²Hunter, V. Arlington Pk. Coll., Chiswick
Jenkins, W.R.T. *g.* Oakes Inst., Walton
Johnson, E.A. *q.*
Elmhurst S., Kingston-on-Thames
Jolley, R.W. *g.el.* Gram. S., Blackpool
²Jones, H.W. County S., Carnarvon
²Kirkwood, T. Private tuition
Little, J. St. Mary's Hall, Cardiff
²Lowrance, H.F. Private tuition
Mills, A.F. *e.* Avenue H., Sevenoaks
Nicholson, T. Delaval Council S., Benwell
²Ninnis, M.W. Grammar S., St. Ives
²Norman, V.P. Private tuition
²Oblaker, T. Salesian S., Battersea
Rackham, L.W.
King Edward VI. Middle S., Norwich
²Rimington, C.H.
Gosberton Hall S., nr. Spalding
²Sankey, R.A. Gram. S., Blackpool
Serpell, G.R. Wadham S., Liskeard
Smith, J.F. *e.* Finsbury Park Coll., N.
Stockley, F.S. High S. for Boys, Croydon
Thompson, J. *a.* Oakes Inst., Walton
Tolmon, F.G. *e.g.* Waldron H., Havant
²Twelvetrees, E.D.
Ivel Bury S., Biggleswade
Walton, S. Elmfield Coll., York
²Warburton, P. Wesley Coll., Sheffield
Wells, P.C. *g.* Winchester H., Bristol
Welsley, F.H. Farnworth Gram. S.
Youngs, H. *q.a.*
King Edward VI. Middle S., Norwich

Atkinson, A. Gram. S., Devizes
Ayre, H.O. *d.* Gram. S., Blackpool
Barker, R.S. *d.* Albert H., Carlisle
Burningham, R.A., *sc.*
Elmhurst S., Kingston-on-Thames
²Carter, A.W. Private tuition
Cawte, W. Trafalgar H., Winchester
Cleator, C.D. Crossley & Porter S., Halifax.
Cliffen, W.D. Eversley S., Southwold
Cox, S.V. Long Ashton S., Bristol
Culy, A. *g.d.* Private tuition
²Davies, S.C. Lucton S., Herefordshire
Fowler, J.W. *a.* Elmfield Coll., York
Franklin, J.C. *d.* Sandwich School
Grundy, E. Kilgrimol S., St. Anne's-on-Sea
Horsefield, D.F. *e.*
Littleton H., Knowle, Bristol
Hutton, H.H.
Woolston Coll., nr. Southampton
²Hyde, A.H.J. Fellthorpe H., Gt. Malvern
Jackson, A.H. *e.* Seaford College
Linton, W. *f.* Oxford H., S. Croydon
Manson, M.M. *f.*
The Dulwich Hamlet S., S.E.
Marsh, S.M. *e.g.* Reading Coll. S.
²Miller, B.T. Langharne S., Southsea
Robinson, H. *e.g.*
Kilgrimol S., St. Anne's-on-Sea
Scott, E.H. Friends' S., Saffron Walden
Selby, A.B. *a.*
Gosberton Hall S., nr. Spalding
²Sproston, J.B. Victoria Coll., Congleton
Stanford, O.G. Castle Hill S., W. Ealing
²Stonebridge, E.E.
King Edward VI. Middle S., Norwich
Thompson, D. *d.* Ashley H., Worksop
Trenowath, W. *g.* Croad's S., King's Lynn
²Walton, C.H. Modern S., Southport
Vierke, C.F. Merton H., Clittonville

Aspin, T.A. *e.g.d.* Oakes Inst., Walton
Bates, W.E. *e.*
King Edward VI. Middle S., Norwich
Beetham, G.C.
Pierremont Coll., Broadstairs
²Bobby, B. Boys' High S., Iron Bridge
²Boothroyd, G. Lucton S., Herefordshire
²Brewster, A.W.
King Edward VI. Middle S., Norwich
Brooks, E.G. *f.*
Hertford County Coll., New Barnet
Bull, H.G. *g.a.* Towcester School
Cooper, H. *d.* Deal College
Croucher, F.H. Oxford H., Bexhill-on-Sea
Denton, J.O. *d.* Gram. S., Ramsey, Hunts.
Edwards, W.I'E.
King Edward VI. Middle S., Norwich
Gane, J.L. Gainford High S., nr. Darlington
Grimes, S.E. *d.* Reading Coll. S.
Halle, C.E. *e.* Colebrook H., Bognor
Henderson, G.T. Avenue H., Sevenoaks
²Hindle, H. Gram. S., Blackpool
²Hobson, J.S. Wolverley Gram. S.
Hood, J.G. *e.* SouthdownColl., Eastbourne
Horrell, J.B. *e.g.*
Pierremont Coll., Broadstairs
Hough, S.H. St. Aubyn's, Woodford Green
²Hughes, J. St. Boniface Coll., Plymouth
²Hughes, R.H. Sandwich School
Hyde, A.J. *d.* Victoria Park S., Manchester
²Inston, H.J. Bourne College, Quinton
Jennings, A. *a.* Saham Coll., Watton
Linzee, N.H. *g.*
Woolston Coll., nr. Southampton
Lycett, P.J. *gm.* Wolverley Gram. S.
Marsden, H.E. *e.g.d.*
Bickerton H., Birkdale
Odle, E.V. Borden Gram. S.
Outram, H. *d.* Gram. S., Ongar
²Revie, A.A. Private tuition
Solman, J.W. *g.* Brunswick H., Maidstone
²Soul, E.W. St. Leonards Coll. S.
²Thompson, W.P. Private tuition
²Veysey, R.P. School of Science, Paignton
Weeden, C.H. *g.*
St. Aubyn's, Woodford Green
Wheeler, W.D.
Pierremont Coll., Broadstairs
²Whittington, W.H. Gram. S., Ealing
²Williams, T.C. Private tuition
²Wilson, R.W. Bridgnorth Gram. S.
²Woodward, N.P. Langharne S., Southsea
Worthington, P.C.*g.* FroebelH., Devonport

Ackland, J. Chaloner's S., Braunton
²Allison, A. Higher Grade S., Selby
Bailey, F. *g.d.* Oakes Inst., Walton
Berry, W.E. Farnworth Gram. S.
²Boultbee, T.E.M. MaryStreetH., Taunton
Brittain, H.T.L. Wolverley Gram. S.
Brown, F.W. *d.*
Gosberton Hall S., nr. Spalding
²Collier, F. Farnworth Gram. S.
²Connal, M.J. Gram. S., Seven Kings
Coussey, J.H. Gram. S., Shoreham
²Cuttiford, W.F. Private tuition
Drage, F.H. *g.* Collett H., Bournemouth
Ellis, F.R. Gram. S., Hayle
Fielder, G. *d.* Stranraer, Fareham
²Flatt, P.J.
King Edward VI. Middle S., Norwich
Gilbert, J.W. *d.* Taunton School
Grant, J.W. Modern S., Gravesend
Herrmann, A.E. *e.*
St. Aubyn's, Woodford Green
²Hill, E. Victoria Coll., Congleton
Hills, L. *g.* Addington Sq. S., Margate
²Knight, A.J. Springfield Coll., Acton Hill
Lee, S.E. Albert H., Carlisle
²Lewis, C.P. Manor H., Clapham
Lock, E. *a.* Deal College
Lurcock, H.J. Brunswick H., Maidstone
²Lyon, C.B. St. Aubyn's, Woodford Green
²Mumby, G.C.R. Private tuition
Peet, H.F. Cliftonville Coll., Margate
²Petter, R.S. Highfield S., Chertsey
Primrose, H.R. *g.*
King Edward VI. Middle S., Norwich
Rake, A.W. *g.* Wadham S., Liskeard
²Riley, H.H. KilgrimolS., St. Anne's-on-Sea
Robson, W. Heaton Lodge, Bradley
²Rogers, R.G. Gram. S., Sale
Salmon, G. Steyne S., Worthing
²Smith, A.G. Froebel H., Devonport
Smith, T.C. *d.* Bilton Grange S., Harrogate
Starbuck, J.W.S.
St. John's Coll., Green Lanes, N.
Trew, M.F. Eversley S., Southwold
²Watson, J.C. New Coll., Harrogate
²Webb, C.R. Wolverley Gram. S.
Whitsed, P.G. Barton S., Wisbech
Willings, C. *e.* High S., Brentwood
²Wilson, A. Ashford H., Birkenhead

²Aylward, G.G. Lucton S., Herefordshire
²Barnard, J.H.M. DuncanH., Gt. Yarmouth
²Bell, R.E. Manor S., York
Berry, W.H.S. Kendrick Boys' S., Reading
Craggs, W.P. Delaval Council S., Benwell
Crockwell, C.G. *g.* Public Coll., Torquay
Cuff, A.H. *e.a.* Clifford S., Beckington
Daniels, C.E. Oakes Inst., Walton
Dodson, F. *a.* Classical & Comm. S., Preston
Eades, P.J. *e.* Brunswick H., Maidstone
²Egan, A. St. Boniface's Coll., Plymouth
Gil, J.V.
Clapham Coll. S., Gauden Rd., S.W.
Goss, H.J. HighS., Alsager, Stoke-on-Trent
Grimes, W.S. The College, Bracknell
Harcourt, R.C. *d.*
King Edward VI. Middle S., Norwich
²Jones, E.G.
Gram. S., Chorlton-cum-Hardy
Jones, L.E. *e.* TheCommercial S., Stretford
²Joyner, E.W. Friends' S., Wigton
²Kellett, H. Malden College
Laing, D.E. *e.* Taunton School
Leaver, T.C. Penketh S., nr. Warrington
Lovelock, R.G. *e.* Stanley H., Cliftonville
²Macvean, D.C.
Arlington Park Coll., Chiswick
²Madgin, W. Old Elvet S., Durham
²Malzard, S. Jersey Modern S.
Manley, V.S. Emwell S., Warminster
Nott, L.W. Friends' S., Wigton
²Penhale, W. Holsworthy Middle School
²Pilcher, R.T. Reading Coll. S.
Purser, A.H. *e.* Manor H., Clapham
Smith, F.A. *g.* Loughton School
Spencer, H.T. *a.d.* Oakes Inst., Walton
²Tanfield, A.R. Wolverley Gram. S.
Taylor, F. *s.* Addington Sq. S., Margate
Voysey, A.H. Malden College
Wiltshire, C.S. Gram. S., Devizes
Young, S.G. Arnold H., Northampton

Arthur, S.A. New Coll., Harrogate
Barber, A.L. *a.*
Kingsholme S., Weston-s.-Mare
Bellamy, F.H. *g.* Cranbrook Coll., Ilford
²Boddy, E.M.N. Westfield H., Reading
Booth, R. Christ's Coll., Blackheath
Brampton, G.S. *d.* Wolverley Gram. S.
Bright, W.J. *e.g.d.* BourneCollege, Quinton
Bryan, D.M. The Cedars, Ealing
Butler, E. Castle Hill S., W. Ealing
Carter, A.C. *d.* Seaford College
Champion, G.A. *d.* Gram. S., Wallington
²Comeau, P. Private tuition
²Dabbs, W. Private tuition
²Fiddick, T.L. Private tuition
Fletcher, C.A. *a.* Kibworth School
²Gates, S. St. Leonards Coll., S.
Goodwin, A.S. Reading Coll. S.
Holmden, E.H.
Southdown Coll., Eastbourne
Horncastle, E.W. Avenue H., Sevenoaks
Jeeves, S.G. Stanley H., Cliftonville
Lang-Gieve, P.L. CamdenRoadColl.S., N.
Lewis, A.W. *g.d.* Gram. S., Wallington
²Little, H.L. Boys' High S., Erdington
Marsland, W.R. *d.* BourneCollege, Quinton
Parsons, F.F. Manor H., Clapham
²Penwill, A.A. Gram.S., NewtonAbbot
²Perrett, H.T. Westfield H., Reading
Prince, P. Brunswick H., Maidstone
Slingsby, T.F.C. ScarisbrickColl., Birkdale
Smith, G.F. *d.* Deal College
Snape, B. Hatfield Coll., nr Doncaster
²Wardell, R.E. Private tuition
Welch, H.S. Wolverley Gram. S.

Attenborough, D.C. *e.*
Mount Hermon S., Woking
Attrill, T.W. Northgate S., Winchester
²Bartlett, J.H.
Crossley & Porter S., Halifax
²Bennett, W. Private tuition
Blatcher, P.C. *e.* Gram. S., Ongar
Boult, H. *e.* Ashley H. Worksop
Brown, A. *e.d.* Gram. S., Wallington
Brown, P.G. Seaford College
Brownson, H.O. *a.*
Queen Elizabeth's Gram.S., Ashburne
Bush, W.O. *d.*
King Edward VI. Middle S., Norwich
²Casper, E. Bilton Grange S., Harrogate
²Cosgrove, A.W. Gram. S., Shoreham
Cottam, L.T. *a.d.*
Commercial S., Downham Market
Criper, S.F. Gram. S., Shoreham
Culverwell, W.A. The High S., Minehead
Curwen, H. *e.*
Kilgrimol S., St. Anne's-on-Sea
²Davies, C.E.
Hampton Gram. S., Glasbury-on-Wye
Fuller, E.P. *g.* Private tuition
²Gadsby, S. Bridgnorth Gram. S.
Galbraith, D.H. *sc.* Borden Gram. S.
Gambell, H.C. Seaford College
Guy, E.F. The Tutorial S., Penarth
²Hamilton, S.R. Highfield S., Chertsey
Heap, F.G. The High School, Blackpool
Hewitt, H.H. *g.a.d.* Oakes Inst., Walton
²Hickey, S.G.M. St. Mark's S., Windsor
²Lathbury, R.L.G. Private tuition
Le Boutillier, H.J. *g.f.*
Harleston H., St. Lawrence, Jersey
²Le Masurier, P.J.
High S., St. Helier's, Jersey
²Le Rossignol, A.A. Private tuition
²Leslie, R. Hardwicke H., Seaford
Lowe, G. *d.* Kilgrimol S., St. Anne's-on-Sea
McGregor, J. *e.d.* Bickerton H., Birkdale
²Middleton, H. Academy, Crewe
²Morris, H. Kilgrimol S., St. Anne's-on-Sea
Norman, R.V. Channel View S., Clevedon
North, S.B. *e.* Taunton School
²Oliver, F. Holsworthy Middle School
Owen, T.F. *e.g.* Oakes Inst., Walton
²Palmer, R.B.
King Edward VI. Middle S., Norwich
Parker, C.A. *a.* Manor H., Clapham
Popplewell, E. *e.* Steyne S., Worthing
Randall, A.H.C. Gram. S., Wallington
²Simpson, J.
Cathcart Coll., Cathcart Hill, N.
Skoyles, G.C. Bracondale S., Norwich
Steers, L.G. *e.* Winchester H., Bristol
Tripp, N. Rolandseck S., Ealing
Watts, D. Trafalgar H., Winchester
White, L.S. Reagill H., Bath
Williams, W.B. Northgate S., Winchester
Woods, E.F. *e.* Camden Road Coll. S., N.

²Abbott, J.E. Private tuition
²Andrews, W.R. Gram. S., Shoreham
Bainbridge, J. *d.*
Middle Class S., Stalybridge
Ball, O.W. Borden Gram. S.
²Ballard, A.L. Clyde H., Hereford
²Baxter, R. Deacon's S., Peterborough
²Bonus, A.D. Stranraer, Fareham
Bradbury, A.V. *d.* Hall Gate S., Doncaster
Bulleid, A. Public Coll., Torquay
Burrow, H.W.
Kingsholme S., Weston-s.-Mare
²Cross, A.R. Cambridge H., Norwich
²Crossley, J.H. Modern S., Southport
²Davidson, C.C. Elmfield Coll., York
Dutton, J.B. Hasland H., Penarth
²Edwards, E.F. Comm. Coll., Acton
Elford, E.L. Taunton School
Fenn, W.S.F. *e.*
Chandos Gram. S., Winchcombe
Gardner, D.A. *g.* Oakes Inst., Walton
Gernon, R.A. Stoke Newington Gram. S.
Hayter, L. *a.d.* Chaloner's S., Braunton
Hews, R. York H., Reading
Holliday, J.F. Oakes Inst., Walton
Levy, V.I. Maida Vale School, W.
Luscombe, H.
Bradley High S., Newton Abbot
Lyne, E. *d.* St. Kilda's Coll., Brighton
Morgan, J.C. *e.* Lucton S., Herefordshire
Morphew, L.L.
Crompton S., Southend-on-Sea
Personage, E. *a.*
Crossley & Porter S., Halifax
²Robinson, F. Grammar S., Margate
Roper, W.S. *a.* Wolverley Gram. S.
Sibthorpe, R.K.
Hatfield H., St. Leonards-on-Sea
Smith, W.G. *g.a.* Hall Gate S., Doncaster
²Stedman, G.N. Mercers' S., Holborn, E.C.
Thierens, J.P. *e.*
Catholic Coll., Lytham, Lancs.
Wheater, A. Gram. S., Scarborough
White, F.C. *d.* Hall Gate S., Doncaster
Wood, C.N. *d.* BroughtonS., Hr. Broughton

²Ames, S.S. Belle Vue H., Norwich
Blampied, H.O. *g.*
Harleston H., St. Lawrence, Jersey
Bloodworth, A.F.
The Douglas S., Cheltenham
Buckley, H.
Kilgrimol S., St. Anne's-on-Sea
Canwarden, G.P. GunnersburyS., Chiswick
Child, E.E. Vicar's Choir S., Hull
Clarke, M.A. *a.*
Gosberton Hall S., nr. Spalding
Colbourne, J. *g.* Stanley H., Cliftonville
²Cooksey, J.R.H.
Northgate H., Winchester
²Corner, W.A. Modern S., Eccles
Davies, E. *g.d.* Oakes Inst., Walton
Elliott, F.A. Gram. S., Ramsey, Hunts.
Feinstein, J. *s.* Great Ealing School, W.
Freedman, L.H. Grammar S., Margate
Giles, R.W. *e.*
Marlborough Coll. Tue Book, L'pool
Greenwood, W.H. *f.*
Wood Green Comm. S., N.
²Holbourn, G.R. Barton S., Wisbech
²Jackson, J.W.A.P.
Northern Institute, Leeds
Johnson, L. Brunswick H., Maidstone
²Johnson, W.F. Haverfordwest Gram. S.
Joyner, C.F. *d.* The College, Clevedon
²Kendale, G. Kibworth School
²Lang, L.W. Private tuition
²Lee, F.A. Kendrick Boys' S., Reading
Love, R.A. *e.* Wimbledon Coll. S., S.W.
Lumb, E. Gram. S., Blackpool
Manbey, B.K. *d.*
CromptonS., Southend-on-Sea
Manning, C.R.U. Eversley S., Southwold
Parkyn, L.J. Haringey Park S., N.
²Plummer, A.H.
Gosberton Hall S., nr. Spalding
Rees, A.G. *g.* Cliftonville Coll., Margate
Skipper, S.St.C. Earls Colne Gram. S.
²Stacy, G.S. Castle Hill S., W. Ealing
Stilwell, M.H. Castle Hill S., W. Ealing
Taylor, H.R. *g.* Gram. S., Wallington
²Thorne, H.A. Private tuition

Ablott, W.S. *d.* Elmfield Coll., York
²Aris, W.R.
King Edward VI. Middle S., Norwich
²Armstrong, D.B. Private tuition
Barr, R. *e.* Arlington Villa, Brighton
Beach, L.J. Lucton S., Herefordshire
Brown, B. Earls Colne Gram. S.
Cannot, P.A. Maida Vale School, W.
²Canton, H. Private tuition
Cooke, F.H.
Gosberton Hall S., nr. Spalding
Coverdale, G.B. Elmfield Coll., York
²Cowie, A.M. *a.* Private tuition
²Fellows, D.V.L. Private tuition
Flexman, E. *d.* Deal College
Godfrey, L.C. Lyncombe S., Titchfield
Goldsworthy, F.G. Gram. S., Hayle
Greenhalgh, H.
Christ Church Hr. Grade S., Southport
Gregory, H.G. Gram. S., Ongar
Hainsworth, W. *g.* Hall Gate S., Doncaster

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BOYS, 3RD CLASS, PASS—*Continued.*

Holway, P. D.
Kingsholme S., Weston-s.-Mare
²Key, S. H. Private tuition
²Lee, A. H. High S. for Boys, Croydon
Matthews, W. F. *g.d.* Modern S., Gravesend
Matthews, W. H.
Kingsholme S., Weston-s.-Mare
Pratt, C. M. Ellesmere S., Harrogate
Rose, A. N. Commercial Coll., York
Sandiford, E. T. *g.* Oakes Inst., Walton
²Scoble, H. Bell's Gram. S., Coleford, Glos.
²Sibthorpe, W. E.
Hatfield H., St. Leonards-on-Sea
Spranklin, S. J. *g.* St. John's Coll., Brixton
Tanner, G. F. *d.* High S., Brentwood
Underwood, D. L. *a.* Taunton School
Vincent, F. S. *g.* Jersey Modern S.
Waymouth, C. E. Public Coll., Torquay
West, W. J. *d.* Stranraer, Fareham
Willson, C. D. Burgess Hill High S.
²Wonnacott, J. P.
Dunheved Coll., Launceston

²Anderson, J. H.
Handel Coll., Southampton
²Caulfeild, C. E.
Arlington Pk. Coll., Chiswick
Clarke, J. *d.* Classical & Comm. S., Preston
²Cowdroy, A. A. H. Private tuition
Currie, W. Victoria Park S., Manchester
Dunstall, W. G. Stanley H., Cliftonville
Else, L. S. Brunswick H., Maidstone
Field, G. S. Fern Terrace S., Southborough
²Ford, C. Caversham H., Caversham
²Gordon, D. Wirral Coll., Hoylake
Hobbs, A. Steyne S., Worthing
Holland, R. W. *g.* Lyncombe S., Titchfield
Jaques, T. *a.d.* Hall Gate S., Doncaster
Kelsall, E. *a.* Penketh S., nr. Warrington
Landau, V. S. Great Ealing School
Lockyer, G. M. Cranbrook Coll., Ilford
Morton, L. G. H. Tudor H., Denmark Hill
Mumford, B. L. High S., Brentwood
Palmer, H. N. B. Duncan H., Gt. Yarmouth
Parry, L. Ashley House, Worksop
Penrose, D. M. Sandwich School
Pickup, V. E. *d.*
St. Martin's Gram. S., Scarborough
Poulter, H. A. C. *f.ge.*
Stoke Newington Gram. S.
²Russell, E. C. Wolverley Gram. S.
Skinner, G. H. Arlington Pk. Coll., Chiswick
²Slade, D. W. Sandbach School
²Smith, H. H. High S., Worthing
Stock, P. H. *d.* Private tuition
Thompson, R. F. Loughton School
Vian, R. F. Crossley & Porter S., Halifax
²Viner, R. Bourne College, Quinton
²Williams, E. R. The Tutorial S., Penarth
Wolstenholme, J. G. Rutland S., Filey

Beck, W. A. P. *e.* St. Leonards Coll. S.
Bennett-Evans, H. W. *a.al.*
Oakes Inst., Walton
Burnham, H. J. Taunton School
Cortazzi, R. A. *d.* High S. for Boys, Croydon
²Crabtree, J. P. 309 Park Rd., Oldham
Dollimore, A. S. outhdown Coll., Eastbourne
Dunning, C. E. Bracondale S., Norwich
Edkins, G. F. Gram. S., Shoreham
Grimwood, F. R. *e.g.* Cranbrook Coll., Ilford
²Hall, R. S. Highbury Park School, N.
Higgs, H. J. Kendrick Boys' S., Reading
Holden, G. F. Elmfield Coll., York
²Horner, F. R. Gram. S., Newton Abbot
Kilner, S. A. Pierremont Coll., Broadstairs
King, J. *a.d.* Long Ashton S., Bristol
Le Sueur, F. *g.f.*
Harleston H., St. Lawrence, Jersey
Mann, F. *e.g.* Earls Colne Gram. S.
Mitchell, J. W. Merton H., Cliftonville
Palmer, H. J. Loughton School
Palmer, S. B. Bracondale S., Norwich
Parsons, V. C. *d.* Bourne Coll., Quinton
²Platt, P. T. Grammar S., Margate
²Prater, J. H.
Central Foundation S., Cowper St. E.C.
²Recks, G. Handel Coll., Southampton
Rickards, A. K. Warwick H., Southsea
Slater, G. A. *g.* Penketh S., nr. Warrington
²Smith, I. G.
King Edward VI. Middle S., Norwich

Bainbridge, E. *a.d.*
Middle Class S., Stalybridge
²Beach, E. W. Wolverley Gram. S.
Brooker, J. H. Brunswick H., Maidstone
²Chamberlain, R. R. Gram. S., Shoreham
²Cokayne, R. H.
Cusack Inst., Moorfields, E.C.
Complin, W. J. Trafalgar H., Winchester
Farnell, F. W. *d.*
Christ Church Hr. Grade S., Southport
Francis, M. *d.* Warwick H., Southsea
French, S. M. Earls Colne Gram. S.
Gill, H. C. Gram. S., Chorlton-cum-Hardy
Godin, H. E. Loughton School
Green, H. B.
King Edward VI. Middle S., Norwich
Harman, H. H. Castle Hill S., W. Ealing
Harrington, W. J.
The Douglas S., Cheltenham
²Harris, E. O. Private tuition
Holmes, C. *d.* Deal College
²Kemp, L. W. Gosberton Hall S., nr. Spalding
Lockett, W. J.
Elmhurst S., Kingston-on-Thames
²Mills, F. W. J. Highfield S., Chertsey
Pym, J. *g.* The High S., Devonport
²Ryland, F. W.
St. Edward's Gram. S., Stow-on-Wold
Sainsbury, S. H. J. Gram. S., Devizes
Sephton, J. D. *a.*
Christ Church Hr. Grade S., Southport
²Seymour, L. R. Rolandseck S., Ealing
²Stephenson, C. Private tuition
Taggett, A. H. Richmond Hill School
²Thorn, H. L. Private tuition
Williams, R. Camden Road Coll. S., N.
Williamson, H. E. *d.* Taunton School

Abbott, S. S. The Cedars, Ealing
Barnett, H. A. Winchester H., Bristol
²Becker, H. S. St. Boniface's Coll., Plymouth
Bridge, H. *g.d.* Cliftonville Coll., Margate
Brown, J. R. A. *d.* Harlesden College, N.W.
Bullen, A. G.
King Edward VI. Middle S., Norwich
²Chester, J. R. W.
Clark's Civil Service Coll., Chancery Lane
Clulee, C. S. Wolverley Gram. S.
²Collis, C. A. Private tuition
²Cornish, H. H. Private tuition
Drake, P. F. Mt. Radford S., Exeter
²Durant, W. T. Private tuition
²Featherstone, T. P. Private tuition
Frank, L. *g.* New Coll., Harrogate
Gemmill, W. *d.* Windsor H., High Ongar
Helmore, W. J.
Dunn's Endowed S., Crediton
Lavers, F. J. R. St. Winifred's S., Torquay
²Middel, S.
St. Helen's Roman Catholic S., Southend
Milner, F. E. *d.*
Arlington Pk. Coll., Chiswick
Pilliner, A. P. H. Gram. S., Ealing
²Ross, K. D. Jersey Modern S.
Ryland, H. H. *d.* Kibworth School
Smith, G. H. Bourne College, Quinton
Smith, S. A.
Queen Elizabeth's Gram. S., Ashburne
²Tinkler, R. K. Lancaster Coll., Morecambe
Tucker, H. P. *d.* Public Coll., Torquay
²Twist, H. Catholic Gram. S., St. Helen's
Uren, B. J. Grammar S., St. Ives
²Wild, O. H. Essex Lodge, Cheltenham
Wiltshire, J. B. *d.* Trafalgar H., Winchester

Beswick, A. N. Gram. S., Altrincham
²Blackham, F. Private tuition
Bunn, E. A. Belle Vue H., Norwich
Cade, R. Camden Road Coll. S., N.
Clarke, L. W. Raleigh Coll., Brixton
Cole, G. E. *d.* St. Kilda's Coll., Brighton
Crisp, C. Chandos Gram. S., Winchcombe
Dennis, G.
King Edward VI. Middle S., Norwich
Gates, A. W. *g.* Channel View S., Clevedon
Hargreaves, J. Gram. S., Blackpool
Hutchinson, H. W. *d.* Barton S., Wisbech
²Jackson, H. W. Private tuition
Jarrett, H. W. St. John's Coll., Brixton
²Jones, O. E. Private tuition
Kitts, W. T.
Hertford County Coll., New Barnet
Lake, S. *d.* Commercial Coll., Worthing
Mathews, G. D. Taunton School
McIntyre, J. Oakes Inst., Walton
McQuillin, L. St. Catherine's S., Sheffield
Orrell, E. J. *e.d.* Oakes Inst., Walton
Roberts, J. *d.* Ashley H., Worksop
Rolls, W. H. Boys' Coll. S., Aldershot
Sortwell, A. R. Taunton School
Stiell, G. Manor H., Clapham
Stone, S. *g.* Towcester School
Walter, P. Crompton S., Southend-on-Sea
Walters, H. F.
Holloway Coll., Holloway Rd., N.
Warner, A. *d.* Kibworth School
Whitaker, A. The College, Churwell
Williams, R. K. *d.*
St. Martin's Gram. S., Scarborough
Yetton, W. J. Gram. S., Ongar
²Birtwistle, W.
Kilgrimol S., St. Anne's-on-Sea
Bowen, E. B. Channel View S., Clevedon
²Browne, E.
African Training Inst., Colwyn Bay
²Burdett, B. Malden College
Butler, H. E. *a.* Halesowen Gram. S.
Dengate, G. St. Leonards Coll. S.
Eberli, W. F. Highbury Park School, N.
Garrard, G. G. C. *d.*
Hatfield H., St. Leonards-on-Sea
Hadfield, S. Oakes Inst., Walton
Hawks, L. A. Brunswick H., Maidstone
Hearn, W. *g.* St. Winifred's S., Torquay
Hecker, F. Gram. S., Ongar
Hughes, T. H. Gram. S., Blackpool
Jacobs, S. S. *g.* Tivoli H., Gravesend
King, E. G. St. John's Coll., Green Lanes, N.
²Lambert, R. B. Higher Grade S., Selby
Mahy, V. Gram. S., Cowes
Maylor, H. *a.* Classical & Comm. S., Preston
Minton, J. Lucton S., Herefordshire
²Mumford, D. J. Salway Coll., Leytonstone
Munro, H. A. *g.* Formby & Freshfield High S.
Nias, T. S. Stanley H., Cliftonville
Padwick, H. D. H. Gram. S., Taplow
Paul, H. N. *e.*
King Edward VI. Middle S., Norwich
Pearson, N. A. Modern S., Gravesend
Penny, W. N. The College, Weston-s.-Mare
Perry, G. *d.* Long Ashton S., Bristol
Phillips, G. *d.* Seaford College
Pinchbeck, F. J. *a.d.*
St. John's Coll., Green Lanes, N.
Pinker, S. J. *e.* Reading Coll. S.
²Ray, F. H. Northgate S., Winchester
Roberts, H. S. Cliftonville Coll., Margate
Underhill, R. Wolverley Gram. S.
Voysey, R. T. Malden College
Warburton, F.
Christ Church Hr. Grade S., Southport

Bagnall, W. C. *g.d.*
Lawn H., Clapham Rd., S.W.
Blampied, J. Le C. Oxenford H., Jersey
Bloxsidge, F. Addington Sq. S., Margate
²Capon, A. W. Ivel Bury S., Biggleswade
Cowling, C. S. Public Coll., Torquay
Dane, E. The Briary, Northwood
²Davis, H. C. High S. for Boys, Croydon
Eastcott, H. G. Froebel H., Devonport
²Grace, J. E. Gram. S., Goole
²Head, R. Brunswick H., Maidstone
Hill, R. C. H. *d.* Northgate S., Winchester
Lockington, H. A. Harlesden Coll., N.W.
Nortier, L. J. A. Jersey Modern S.
Parker, F. N. High S. for Boys, Brondesbury
Rines, J. E. The College, Scarborough
²Simpson, G. C. Victoria Coll., Congleton
²Simpson, G. H. Long Ashton S., Bristol
²Small, D. Kent Coll., Canterbury
²Vogel, H. C. St. Leonards Coll. S.
Wakeford, O. Reading Coll. S.
Watkins, A. *d.*
Crompton S., Southend-on-Sea
²Weston, W. J. St. Leonards Coll. S.
²Wignall, J. Private tuition
²Willats, H. G. Wilton H., Exeter
Wood, J. Lytham College

Allwood, G. A. The High S., Blackpool
Anning, E. J. St. Winifred's S., Torquay
Barden, J. *d.* Pembroke Coll., Harrogate
Blunt, W. Barton S., Wisbech
Boxhall, W. Vicar's Choir S., Hull
²Chippindale, R. F. Ellesmere S., Harrogate
Cogdon, C. W. Stoke Newington Gram. S.
²Coleman, A. F. Private tuition
Delvitt, A. Anerley College, S.E.
Docking, C. W. High S. for Boys, Croydon
²Fairbanks, W. Friends' S., Saffron Walden
Free, D. W. Taunton School
²Hewson, K. M. Stationers' Co.'s S., Hornsey
²Horsford, W. T. *e.* Taunton School
Hulme, R. L. H. *g.* Gram. S., Blackpool
James, W. Friends' S., Wigton
Lechler, A. N. *g.* Linden H., St. John's, S.E.
Meredith, T. B. *g.* Wolverley Gram. S.
Newbery, B. *e.* St. Leonards Coll., S.
²Oxley, F. R. Mount Hermon S., Woking
Parker, L. Barton S., Wisbech
²Peel, I. Elland Gram. S.
Peters, S. Mary Street H., Taunton
²Power, W. Academy, Crewe
Price, C. L. Wadham S., Liskeard
Richardson, H. T. St. Michael's H., Hastings
Smith, H. B. Kendrick Boys' S., Reading
²Stewart, A. W.
Broomy Hill Acad., Hereford
Stockdale, L. N. *d.* Malden College
Taylor, H. R. Taunton School
Whittaker, J. H. Farnworth Gram. S.

Arnold, H. J. F. Channel View S., Clevedon
Baldwin, E. W. Gram. S., Birkdale
Bannister, R.
Grammar S., St. Anne's-on-Sea
Bartrop, A. N.
Pierremont Coll., Broadstairs
Binns, W. D.
Cathcart Coll., Cathcart Hill, N.
Bourgogne, R. N. Saham Coll., Watton
²Bryant, F. E.
King Edward VI. Middle S., Norwich
Causebrook, J. R. Towcester School
Clayton, H. Bickerton H., Birkdale
Collier, T. G. Highfield S., Chertsey
Cutler, H. *e.* Ashley H., Worksop
²Daniel, A. M. High S. for Boys, Croydon
²Dobson, R. M. G. Private tuition
Empson, L. W. Monk Bridge S., York
²Fairer, B. M. High S. for Boys, Croydon
Goodwin, H. Victoria Park S., Manchester
²Gould, J. R. S. Caversham H., Caversham
Harper, H. *d.* Willow H., Walsall
Hull, J. J. Catholic Gram S., St. Helen's
Jones, H. Gram. S., Scarborough
Marshall, A. St. Mary's Hall, Cardiff
Mills, A. W. Ellesmere S., Harrogate
Palmer, H. G. D. *d.* Cliffords., Beckington
²Passmore, H. E.
Onslow H., Battersea Rise, S.W.
²Pennington, J.
Catholic Gram. S., St. Helen's
Pither, F. E. Linden H., St. John's, S.E.
²Purdy, M. O. New Coll., Harrogate
Read, D. G. Bracondale S., Norwich
²Renshaw, B. T.
Victoria Park S., Manchester
Roper, C. R. Taunton H., Brighton
Sanders, A. T. *d.* St. Austell College
²Stockman, F. W. Gram. S., E. Finchley
Warner, F. M. Duncan H., Gt. Yarmouth
White, R. Hasland H., Penarth
²White-Corbett, T. J. Private tuition
Willis, E. A. *g.d.* Caversham H., Caversham
²Woodnutt, F. B. Stranraer, Fareham
Woolfenden, J. B. Oakes Inst., Walton

Allen, K. B. *f.*
Grosvenor S., Dennington Pk. Rd., N.W.
Ayres, F. Ashley H., Worksop
Barton, B. B. *g.* Elm Bank S., Nottingham
Bissell, H. *d.* Bourne Coll., Quinton
Brewster, H. J. The Gram. S., Lewes
²Bryant, L.
King Edward VI. Middle S., Norwich
²Bugler, T. W. Beaminster Gram. S.
²Cameron, I. Gram. S., Ealing
²Crozier, H. B. Hutton Gram. S., nr. Preston
Dawbney, F. York H., Reading
Drinkwater, S. P.
Southdown Coll., Eastbourne
Evans, A. G. *g.* The College, Bracknell
Furber, T. Victoria Coll., Congleton
Garland, G. H. C.
St. John's Coll., Green Lanes, N.
²Gillett, A. S. St. Edward's S., Oxford
Goodman, D. Taunton School
Grove, F. E. Halesowen Gram. S.
Harper, C. K. St. Aubyn's, Woolford Green
Harris, W. M. Hove High S.
²Howarth, G. W. Private tuition
²Hurst, F. Hindley Gram. S.
Hussey, C. L. Malden College
Jean, F. G. *f.* Oxenford H., Jersey
Kember, W. Bickerton H., Birkdale
Laker, T. T. Sudbury Gram. S.
²Lazarus, M.
The College, Highbury New Rd., N.
Linzee, J. I. *g.*
Woolston Coll., nr. Southampton
Lyne, R. Academy, Crewe
²Marshall, C. High S. for Boys, Croydon
Martin, F. Crompton S., Southend-on-Sea
Mason, L. H. *g.* Brunswick H., Maidstone
Painter, W. V. Bracondale S., Norwich
Poole, F. W. St. James's Coll. S., Jersey
Rawling, A. The High S., Devonport
Ricks, C. G. Coll. S., Bridgwater
Sheane, A. *d.* Gram. S., Blackpool
Sparks, V. L. *e.d.* High S., Hastings
Stacey, G. L. *e.* High S. for Boys, Croydon
Taylor, D. C. *e.* Manor H., Clapham
Thompson, J. G. Gram. S., Ongar
Wheldon, W. A. Oakes Inst., Walton
Whitehead, R. S.
London Coll., Hornsey Road, N.
²Armytage, J. High S. for Boys, Croydon
²Bartter, F. G.
Tettenhall Coll., nr. Wolverhampton
²Bateman, G. V. Private tuition
Bates, H. S. Borden Gram. S.
Blake, H. G. St. Winifred's S., Torquay
Blampied, T. Le Q. Oxenford H., Jersey
Caley, A. H. Trafalgar H., Winchester
Carter, H. Comm. Coll., Worthing
²Catford, C. H.
Hertford County Coll., New Barnet
Champion, H. E. Modern S., Gravesend
Chiverton, S. R. Gram. S., Cowes
Donkin, C. G. *g.*
St. Aloysius' S., Hornsey Lane, N.
²Dulcken, H. E.
High S. for Boys, Brondesbury
Escolme, R. F. Penketh S., nr. Warrington
Hadfield, E. Oakes Inst., Walton
Hammond, A. F. *g.* High S. for Boys, Croydon
²Holme, L. Academy, Crewe
Jenner, F. H. J. Hyde H., Eastbourne
Jordan, H. E. E. Stoke Newington Gram. S.
Lee, A. G. *g.* Ascham Coll., Clacton-on-Sea
Le Riche, E. Coll. S., St. John's, Jersey
McEwen, J. D. Mt. Radford S., Exeter
²Miller, C. R. Merton H., Cliftonville
Moore, T. Kilgrimol S., St. Anne's-on-Sea
²Ollive, T. R. Claughton Coll. S., Birkenhead
Povey, T. G. *d.*
Marlborough Coll., Tue Brook, L'pool
²Saunders, A. B. Fernie Coll., Highgate, N.
Sinclair, H. L. The Western Coll., Harrogate
Smith, H. B. Deacon's S., Peterborough
Stranger, E. R. Manor H., Clapham
Tew, L. W. Carter H., Deal
Thorne, F. *d.* Elmfield Coll., York
Tressidder, A. R. Gram. S., Ongar
Waddington, A. J. Borden Gram. S.
²Watts, E. S. Middle Class S., Sheffield
Wells, R. H. High S., Hastings
Bennett, C. J. F. Private tuition
Blackburn, J. A. Manor S., York
²Brooks, P. M. Middle Class S., Whitby
Brown, G. *e.* Lucton S., Herefordshire
Caley, A. S. *d.* Tratalgar H., Winchester
Dollond, W. G. Sandwich School
D'Orsey, D. H. M.
Grosvenor S., Dennington Pk. Rd., N.W.
Dougall, J. L. E. Manor H., Clapham
Dutton, G. Victoria Coll., Congleton
Grove, L. V. C. Wolverley Gram. S.
²Harrison, C. High S. for Boys, Croydon
²Jackson, R. W. Private tuition
Jones, A. W. Wadham S., Liskeard
Jones, H. C. Salway Coll., Leytonstone
Kugler, H. W. Victoria Park S., Manchester
Loweth, S. G. C.
Gosberton Hall S., nr. Spalding
Mercer, W. S.
Hertford County Coll., New Barnet

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BOYS, 3RD CLASS, PASS—*Continued.*

²Mountain,A. Private tuition
Philps,A.B. Alcombe S., Dunster
Savage,E.R. Seaford College
Sheffield,W.L. Pembroke Coll.,Harrogate
Shepherd,C.
King Edward VI. Middle S., Norwich
Tarrant,E.W. Bourne College, Quinton
Thomer,W.P. St. Leonards Coll. S.
Thompson,E.R. Commercial Coll.,York
²Turnbull,J.P. New Coll., Harrogate
²Youels,H.A. Longford, Cliftonville
Young,T.E.B. *d.*
London Coll., Hornsey Road, N.
Allen,H.S. Barton S., Wisbech
²Bennett,A.A. Manor H., Clapham
Boyes,R.R. Gram. S., Scarborough
Brown,E.D. *d.* Derwent H., Bamford
Cassy,L.J. Gram. S., Ongar
Catt,F. Burgess Hill High S.
Climpson,W.E. *d.* Hyde H., Eastbourne
²Danks,P. Private tuition
Dollie,A.M. *d.* Gram. S., Ealing
Driffield,P. Clifton Coll., Harrogate
²Ewart,W. Private tuition
²Franklin,H. Private tuition
Greaves,S.P.
Grammar S., St. Anne's-on-Sea
Hall,C.W. High S. for Boys, Croydon
Hawksley,A.M.
Queen Elizabeth's Gram. S., Ashburne
²Higgins,D.A. Private tuition
Hilger,J. *d.* Gram. S., Shoreham
Hughes,R.S.T. Gram. S., Ealing
Johnson,R.S. The College, Scarborough
Jones,E.W. *e.* Clifford S., Beckington
King,R.R. *d.* Kendrick Boys' S., Reading
Medland,H.J. St. Winifred's S., Torquay
Merheim,G. Gram. S., Wallington
²Norris,W.K. Victoria Coll., Congleton
Nott,H.S. Gram. S., Devizes
²Nott,R.W. Private tuition
Pillinor,L.G. *d.* Gram. S., Ealing
Pinnick,L.W. Trafalgar H., Winchester
²Rees,C.E.
St. Martin's Gram. S., Scarborough
²Restall,A.C. ThePhilological S.,Southsea
Riley,J.S. *q.* Oakes Inst., Walton
²Robins,S.F. Froebel H., Devonport
Samuel,L.W. Barton S., Wisbech
Seldon,A. *d.* St.Boniface'sColl.,Plymouth
Shaw,H. Farnworth Gram. S.
Smellie,A. Manor H., Clapham
Start,W.J. Deacon's S., Peterborough
Tindale,G. The Western Coll., Harrogate
Towlson,J.G. Avenue H., Sevenoaks
Watson,P. St. Mary's Hall., Cardiff
Webb,D. Bickerton H., Birkdale
Wright,R.W. *a.* Elmfield Coll., York
Wrigley,H.B. Monk Bridge S., York
Abbott,W.A. Handel Coll., Southampton
Annis,G. Stoke Newington Gram. S.
Arnold,H.J. High S., Brentwood
Austwick,H. Lancaster Coll., Morecambe
Brand,H.F. Modern S., Gravesend
Brown,H.A. *g.d.* Derwent H., Bamford
Butcher,F.C. Camden Road Coll. S., N.
Cordery,M.G. Gram. S., Ongar
Davies,E.J. Wimbledon Coll. S., S.W.
Elliott,G.E. Mount Radford S., Exeter
Grosvenor,S.L. Bourne Coll., Quinton
Hoghton,A. Lytham College
Hunt,M.C. Gram. S., Margate
²Kingdom,C. St. Leonards Coll. S.
Mellor T. Comm. S., Horsforth
Moore,E.F. University S., Herne Bay
²Morison,A.J. Private tuition
Parsons,C. *d.*
Crompton S., Southend-on-Sea
Pugh,V.C. *a.d.* Gram. S., Wallington
Reynolds,W.J.D.
Kingsholme S., Weston-s.-Mare
Simpkin,F.G.V. Kibworth School
²Symmons,C.W. Tynemouth School
Windebank, R.F.
Kingsholme S., Weston-s.-Mare
²Wright,H. Grammar S.,Redditch
Bell,F. *g.* Oakes Inst., Walton
Bowles,H.S. *a.* Highfield S.,Chertsey
²Bright,F.T. Bourne College, Quinton
²Burton,T.A.
King Edward VI. Middle S., Norwich
Coulson,C.B. The College, Scarborough
Edkins,W.R.
Formby and Freshfield High S.
Everett,P.W. University S., Herne Bay
Grundy,R. Elmfield Coll., York
Hayward,W.E. Wolverley Gram. S.
Hobrow,E.J.B.
High S. for Boys, Brondesbury
²Illingworth,H.F. Private tuition
Letts,H.E. St. James's Coll. S., Jersey
Lush,I.R.deW. Gram. S., Wallington
Mansfield,F.T. The Limes, Croydon
²Matthews,E.W. Private tuition
Mayer,G.D. University S., Herne Bay
McEwan,P. Friends' S., Gt. Ayton
Need,F.W. Malden College
Norgate,R. The High S., Devonport
²Painter,F.S. High S. for Boys, Croydon
²Peace,H. Private tuition
Phipps,R.S. *d.* Wolverley Gram. S.
²Pritchard,J.
Catholic Gram. S., St. Helen's
Sercombe,W.F. *d.* The College, Clevedon
Tugwell,G.A.
14 Grosvenor Crescent, Scarborough
Clarke,F. *a.* Wolverley Gram. S.
Clifford,H.G. Northgate S., Winchester
Coote,G. *d.* High S. for Boys, Croydon
²Daborn,C.W. Malden College
George,C.B. *d.* Northgate S., Winchester
Gledhill,J.A. Eton H., Southend-on-Sea
Gouly,S.E. Haringey Park School, N.
²Hansford,C.L. Gram. S., Ealing
²Hookham,F.M.
St. Edward's Gram. S., Stow-on-Wold
Horne,G. Finsbury Park Coll., N.
Jackson,F.H. Bracondale S., Norwich
²Johnstone,R.C.S.
Hatfield H., St. Leonards-on-Sea
Marriott,E. Kendrick Boys' S., Reading
²Moyle,P.A.C. Private tuition
Place,T.K. Academy, Crewe
Potts,D.J. Gram. S., Ramsey, Hunts.
²Rees,W.H. Old Coll., Carmarthen
Revill,P. Parkhurst Coll., Blackpool
Rose,C. *a.*
Commercial S., Downham Market
²Russell,J.L. Wolverley Gram. S.
Schwerzl,H. High S. for Boys, Croydon
Utley,F.
Marlborough Coll., Tue Brook, L'pool
²Wilkinson,A.G.W. Blundell'sS.,Tiverton
Womack,G.E. Saham Coll., Watton
Wright,W.C. Keppel Lodge S., Emsworth
Baker,G.T. Heston H., Hounslow
Barber,C.L. Taunton School
Coleback,E. *q.*
Collegiate S., St. John's, Jersey
Daw,A. Stoke Newington Gram. S.
Haybittel,L.M. Seaford College
Dowell,A.W.
St. John's Coll., Green Lanes, N.
Heath,O.G. *d.* Malden College
²Jenkins,E.T.D. Long Ashton S., Bristol
²Kaiserman,J. Private tuition
Lawrence,W.H. Wolverley Gram. S
²Mitchell,J.C.
King Edward VI. Middle S., Norwich
Moller,A.H. Burgess Hill High S.
Parkinson,N.J.
Gram. S., Chorlton-cum-Hardy
²Scriven,A.R. Wolverley Gram. S.
Weeks,R.M. Friends' S., Wigton
Whibley,R. Borden Gram. S.
Barradell,H.P. *a.* Burgess Hill High S.
Blyde,L.J.N. Kendrick Boys' S.,Reading
Buckley,F.
Kilgrimol S., St. Anne's-on-Sea
Davies,J.G. Froebel H., Devonport
²Davies,T.W.V. Private tuition
²Deakin,G.F. Lucton S., Herefordshire
²De Gruchy,O.W. Oxenford H., Jersey
²Dillon,R.L.A.
38 Tavistock Place, Plymouth
Ethell,T.F. Gram. S., Blackpool
²Grant,J.S. Private tuition
Hill,A. Gram. S., Ramsey, Hunts.
²Ingram,L. Wyllies, Cuckfield
James,R. *a.* Gram. S., Newton Abbot
Johnstone,D.C.
Etonhurst, Weston-s.-Mare
²Kernick,H. Dunheved Coll., Launceston
Lewtas,J. Gram. S., Sale
Longland,R.J. Gram. S., Ramsey, Hunts.
Lumby,T.B. *d.*
Gosberton Hall S., nr. Spalding
Mathias,E.C. *d.*
Kingsholme S., Weston-s.-Mare
North,G. *d.* Commercial S., Horsforth
²Oakley,H. Coll. S., Smethwick
Partridge,C.H. Gram. S., Ongar
Smith,R. *d.* Stranraer, Fareham
Smyter,A.E. Sandwich School
Turnbull,A.N. Cranbrook Coll., Ilford
²Bennett,W.G.T. Private tuition
Bradley,S. *d.* Stoke Newington Gram. S.
Brusey,P. Gosberton Hall S., nr. Spalding
Frampton,H.N. Trafalgar H., Winchester
Griffiths,C.H.H. Gram. S., Shoreham
Haines,W.E. Clyde H., Hereford
²Hogan,H. 38 Tavistock Place, Plymouth
Ironmonger,H.C.
Linden H., St. John's, S.E.
Jackson,H. *d.* Elmfield Coll., York
Jagels,E.J. Heston H., Hounslow
²Jones,H.W. County School, Sutton
Kemball,S.J. Seaford College
Lascelles,F.E.G. Rose Hill S., Banstead
²McConnachie,J.B. Private tuition
²Moffatt,W.G. Private tuition
Myers,C.G. Highbury Park School, N.
Picknell,D.M. *d.* Public Coll., Torquay
²Plunkett,J.J.A.
52 Belle Vue Rd., Friern Barnet
Ruer Private tuition
Shaweross,C.F. Gram. S., Altrincham
Tanner,D. Etonhurst,Weston-s.-Mare
Tebbit,H.E. Anerley College, S.E.
Ashford,R.S. St. Kilda's Coll., Brighton
Ashford,S.W. Gram. S., Clacton-on-Sea
²Barnett,C.S. High S. for Boys, Croydon
Bawn,L.P. Lewisham S., Weston-s.-Mare
Bedford,S. Wolverley Gram. S.
²Blake,A.E. Camden Road Coll. S., N.
Brown,A.S. Stoke Newington Gram. S.
²Chalk,J.P. Hove College
Clarke,C.H. Private tuition
Diss,A.L. High S., Brentwood
Edrich,W.A. Bracondale S., Norwich
Elsworth,G.F.
Marlborough Coll., Tue Brook, L'pool
Gatonby,P.L.L. Elmfield Coll., York
Graham,W.S. Laugharne S., Southsea
Holborn,C. St. Leonards Coll. S.
²Hope,G. Private tuition
Lucking,F. Springfield Coll., Acton Hill
Peel,G.H. Trafalgar H.,Winchester
Philpot,W.P.
Marlborough Coll., Tue Brook, L'pool
Rivett,J. Saham Coll., Watton
Rowson,E. Private tuition
Short,B.P. Kendrick Boys' S., Reading
Sier,J.E.
King Edward VI. Middle S., Norwich
Sly,H.S. Northgate S., Winchester
Stockley,C.I. High S. for Boys, Croydon
Ward,P.J.H. Gram. S. Taplow
Bird,C.D. Modern S., Gravesend
Clarke,F.E. GosbertonHallS.,nr.Spalding
Eddiford,R.B.
Bradley High S., Newton Abbot
Fell,J.D. Gram. S., Scarborough
Foster,F.W. Gram. S., Clacton-on-Sea
Goodchild,R. Wimbledon Coll. S., S.W.
Hart,P.F.D.
South View, St. Leonards -on-Sea
Jarratt,R.C. Castle Hill S., W. Ealing
Monk,H. Gram. S., Fulwood
Neale,S.H. The Douglas S., Cheltenham
Palk,C.E. Public Coll., Torquay
Parker,W.G. Gram. S., Margate
²Perry,F.P. Highfield S., Chertsey
Price,E. Lucton S., Herefordshire
Richards,F.R. *d.* Wolverley Gram. S.
Smith,A.G.S. Clyde H., Hereford
Turner,S.C. Ascham Coll., Clacton-on-Sea
Wood,H. Raleigh Coll., Brixton
Wood,T.S. The College, Rock Ferry
Woods,W.R.P. Clyde H., Hereford
²Ashton,J. Lancaster Coll., Morecambe
Bowyer,H. *g.* Malden College
²Briggs,G. Private tuition
Costello,A. Gram. S., Ongar
Ellison,H.J. Highfield S., Chertsey
Grant,S.T. High S. for Boys, Croydon
²Harris,J.G. Private tuition
²Hatton,J.R. Private tuition
Heath,E.J. Willow H., Wallsall
²Jolliffe,H.H.CatholicGram.S.,St.Helen's
Marsden,W. *d.*
Victoria Park S., Manchester
²Maskell,L.W. Malden College
Muir-Smith,H., *q.* Hyde H., Eastbourne
²Parton,A.B. Victoria Coll., Congleton
²Rogers,C.A.
Clifton House, Wolverhampton
Rolfe,A.B. Gram. S., Taplow
Sack,M. Townley Castle S., Ramsgate
Salmon,K.J. Trafalgar H., Winchester
Smith E. Commercial Coll., York
Turner,R.H. PortlandGram.S., Plymouth
Willett,R.S. BroughtonS.,Hr.Broughton
Banks, C. Christ's Coll., Blackheath
²Bicktord,A. Wilton H., Exeter
Browne,H.O.
Hillmartin Coll., Camden Rd., N.W.
Bust,J.C. Brunswick H., Maidstone
Dart,P. The High S., Devonport
Drayton,C. *d.* Higher Grade S., Selby
Hancock,T.W. Bracondale S., Norwich
Hartree,J.R. Emwell S.,Warminster
²Healy,R.F. Private tuition
Joseph,M.M. MazenodColl.,Kilburn,N.W.
King,C.F. *g.* Bourne College, Quinton
Lake,A.H. Comm. Coll., Worthing
Newman,L. Gram. S., Clacton-on-Sea
²Piquet,R.S. High S., St. Helier's, Jersey
Pledge,R. The High S., Devonport
²Smith,S. Wolverley Gram. S.
Stevens,H.J. Emwell S., Warminster
Taylor,F.P. Lawn H., Clapham Rd., S.W.
Blackmore,S. Wellington Rd. S., Taunton
Brill,A.H. Malden College
Cabot,H.C. St. James's Coll. S., Jersey
Chipperfield,S.
Victoria Park S., Manchester
Flint,R.G.E. Hatfield Coll., nr. Doncaster
²Gadsdon,H.A. Seaford College
Halladay,A. Gram. S., Ongar
Holliday,C.N. *d.*
Christ Church Hr. Grade S., Southport
²Koniglagbe,C.
African Training Inst., Colwyn Bay
Le Maistre,F.W.
Hertford County Coll., New Barnet
²Mariette,F. Montrose H., Plymouth
Martin,J. Gram. S., E. Finchley
²Morgan,C.L.D. Lucton S., Herefordshire
Robinson,F.C. Belle Vue H., Norwich
²Scott,G. Catholic Gram. S., St. Helen's
²Scrivener,K.
Central Foundation S., Cowper St., E.C.
Stacey,R.C. Kendrick Boys' S., Reading
Stackhouse,D. Pembroke Coll., Harrogate
Warner,E.G. Bracondale S., Norwich
Wayte,J The Limes, Croydon
Whaley,H. Ivel Bury S., Biggleswade
²Burn,R.B. Private tuition
Codling,W.F.
London Coll., Hornsey Rd., N.
Crook,A.S. Taunton School
²Crowther,L.B. Private tuition
Cullimore,R.T. Gram. S., Ongar
D'Arcy-Evans, E.C. Grosmont,Bognor
Doherty,J. The High S., Blackpool
Ellis,J.H. Private tuition
Holt,H. Towcester School
²Johnson,R.A. Private tuition
²Kelsey,H.G. Hove College
Kennedy,S.C. Grosmont, Bognor
Kitson,F.H.
Marlborough Coll., Tue Brook, L'pool
Lonsdale,C. Albert H., Carlisle
Morris,J.C. Oakes Inst., Walton
²Pepper,H.S. Sandwich School
Phillips,I.S. Oakes Inst., Walton
Whittle,G.R.S.
Woolston Coll., nr. Southampton
Wright-Motion,G.E. GrammarS.,Margate
Barber,G.R. AschamColl.,Clacton-on-Sea
Cammack,E. The High S., Devonport
Falcke,S.D. Highfield S., Chertsey
²Francis,R.B. Laugharne S., Southsea
Gray,C. St. Austell College
Haughton,H.A.
Catholic Gram. S., St. Helen's
²Jones,S. Boys' High S., Iron Bridge
²Lane,H.P. Lewisham S., Weston-s.-Mare
Merfeld,F.G.
St. John's Coll., Green Lanes, N.
O'Brien,J.G.
St. Boniface's Coll., Plymouth
Pike,G.B. Trafalgar H., Winchester
Roberts,G.P.B.
Willesden Preparatory S., N.W.
²Thompson,C.H. Manor H., Clapham
²Turner,W. Private tuition
Waylen,A.S.
Kingsholme S., Weston-s.-Mare
Bailey,L.G. Bourne College, Quinton
Bilson,W.L. Stanley H., Cliftonville
²Blows,E.C. Private tuition
Brettell,H.W.H. The Cedars, Ealing
Butt,A.H. Northgate S., Winchester
Carlton,L. The High S., Devonport
Daniels,R.A. Belle Vue H., Norwich
²Edwards,W. Private tuition
Eltoft,W.H.
Grammar S., St. Anne's-on-Sea
Fullwood,J.B. *d.* Hounslow Comm. Coll.
²Garden,J.T.T. Private tuition
Garfield,G. Lucton S., Herefordshire
Goster,V.I. Maida Vale S., W.
²Hemsworth,H. Lytham College
²Horne,R.T. ClaughtonColl.S.,Birkenhead
²Jenkins,E.G. Long Ashton S., Bristol
Lockington,G.C. Harlesden College, N.W.
Lyon,S.H. High S., Brentwood
Speakman,T.P.
Marlborough Coll., Tue Brook, L'pool
Stackhouse,E. PembrokeColl.,Harrogate
Williamson,H. Clifton Coll., Harrogate
²Banks,J. Albert H., Carlisle
²Bellamy,H.S.
School of Languages, Sheffield
Brown,F.C. Gram. S., Ealing
Charters,R.B. Oakes Inst., Walton
²Grantham,R. Model S., York
Hogarth,J.W. Delaval Council S.,Benwell
Johnson,S. Commercial Coll., York
Mill,P.L. The College, Rock Ferry
Pulman,G.F. HighS.forBoys,Brondesbury
Renwick,N. Gram. S., Sale
²Righton,W.
St. Bartholomew's Gram. S., Newbury
Stedman,B.J. Handel Coll.,Southampton
Whitfield,J.S. Barton S., Wisbech
Whitty,T. Bracondale S., Norwich
Wiblin,R. The High S., Devonport
Arthur,R Oxenford H., Jersey
Eckley,R.H. Lucton S., Herefordshire
Flowers,S. Laugharne S., Southsea
Gerry,J.J. St. Boniface's Coll., Plymouth
Hill,R.L. Gram. S., Ramsey, Hunts.
Hodson,W.E.
Hertford County Coll., New Barnet
²Lansdown,F. Caversham H., Caversham
Martell,D.W. Handel Coll., Southampton
Pace,A.H. Wolverley Gram S.
Pears,B.S. St. Leonards Coll. S.
²Scott,G. Private tuition
²Abdurahman,I. Private tuition
²Bell,R.D. Simon Langton S., Canterbury
²Bury,E.S. Private tuition
Clements,G.W.
King Edward VI. Middle S., Norwich
²Coley,J.P. LewishamS., Weston-s.-Mare
Flack,H.W. Stanley H., Cliftonville
Harcombe,J.H. Taunton School
Hemmons,G.E. Winchester H., Bristol
²Herbert,W.T. Long Ashton S., Bristol
Hinchliffe,H. New Coll., Harrogate
Hopton,H.P. Wolverley Gram. S.
Humber,C.C. The High S., Blackpool
Hyne,D.F. Oxenford H., Jersey
King,K.T.A.
King Ed. VI. Middle S., Norwich
Loseby,P.A. Elmfield Coll., York
Newton,S.N. Gram. S., Ramsey, Hunts.
Pill,P. The High S., Devonport
Smith,H. Lancaster Coll.,W. Norwood
Sothcott,E. Hounslow Comm. Coll.
Tuffnell,C.E. Castle Hill S., W. Ealing

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CLASS LIST—GIRLS.

(*For list of abbreviations, see page* 102.)

FIRST CLASS [or SENIOR].
Honours Division.

Dukes, I.C. *s.e.h.g.a.al.f.ge.l.*
Milton Mount Coll., Gravesend
Fry, B.D. *s.h.e.d.*
Milton Mount Coll., Gravesend
Howl, F.M. *e.h.al.*
Ladies' Coll., Wellington, Salop
Lowe, F. *s.e.*
Ladies' Coll, Wellington, Salop
Matthews, T. *s.h.a.*
Milton Mount Coll., Gravesend
Sansdell, C.D.M. *s.e.g.*
Milton Mount Coll., Gravesend
Powicke, G.M. *s.h.ge.d.*
Milton Mount Coll., Gravesend
Read, E.M. *s.e.al ge.* West Ham High S.
Comer, W.K. *s.f.mu.* Lonsdale H., Norwich
Inglis, I.M. *s.e.h.f.*
Milton Mount Coll., Gravesend
McNamara, G.F. *f.*
Burlington S., Boyle St., W.
Bevis, K. *s.* St. Bernard's Coll.S., Southsea

FIRST CLASS [or SENIOR].
Pass Division.

Cram, E.G. *p.*
Ellerker Coll., Richmond Hill
Mummery, E.A. *s.m.d.*
Milton Mount Coll., Gravesend
Fitter, L.E. *g.al.* Wilber H., Biggleswade
Jones, M.V. *s.* Church High S., Chepstow
Whyman, M. *s.a.d.*
Milton Mount Coll., Gravesend
Westerley, H. *s.e.*
Milton Mount Coll., Gravesend
Batty, E.A. Milton Mount Coll., Gravesend
Ellis, K.M. *s.* Colville H., Eastbourne
Read, H.M. *s.g.* Westbourne H., Cowes
Sandbrook, O.B. *g.*
Sunfield H., Wellington, Salop
Peachell, H.M. Private tuition
Johnstone, M.J. *s.*
Ellerker Coll., Richmond Hill
Mullock, D. Collett H., Bournemouth
Copland, E.R.K. *s.*
The Limes, Buckhurst Hill
Etches, A.B. *s.*
Ladies' Coll., Wellington, Salop
McCall, H.A. *s.* Private tuition
Richmond, V.G. *s.* Lonsdale H., Norwich
White, A.M. *d.*
Ellerker Coll., Richmond Hill
Fairclough, M. *g.d.*
Convent of Loreto, Hulme
Davies, B.F. *h.*
The Vicarage S., Clapham Common
Pinney, I.A. Ellerker Coll., Richmond Hill
Brewer, M.I. Ellerker Coll., Richmond Hill
Saunderson, M.D. Wilber H., Biggleswade
Bertram, J. *s.a.* Ashley H., Worksop
Hamar, K.E.M. *s.h.*
Ladies' Coll., Wellington, Salop
Moore, E.M. *g.* Emwell S., Warminster
Witchell, G.E. *s.e.a.sh.* Hillside S., Clifton
Sanders, E. *s.f.ge.* Private tuition
Nichols, F.E. *s.d.* London Coll., Stratford
Howard, G. Alexandra Coll., Shirley
Coster, M. *bk.* Gildredge S., Eastbourne
Cooper, S.C. *s.*
Stainsbridge Coll., Malmesbury
Gooding, L.C. *s.*
Ellerker Coll., Richmond Hill
Caws, M.H. Westbourne H., Cowes
Diddell, G.M. *s.*
Holmwood H., Hampstead, N.W.
Elliott, J.M.W. Alexandra Coll., Hastings
Barnett, L. High S., Thrapston
Dowding, R.E. *s.* Harley H., Hereford
Harris, G.E.
Stainsbridge Coll., Malmesbury
Organe, F.S. Stamford Hill High S., N.
Curry, C.M. *s.* Ladies' Coll., Seaford
Bettle, D. York H., Stony Stratford
Bishop, M. Roden H., Ongar
Staddon, H.M. St. Winifred's S., Torquay
Arnold, B.E. Private tuition
Beeston, E. Modern S., Gravesend
Catchpole, B.A. Waveney H., Harleston
Rossiter, E.A. High S., Teignmouth
Coles, A.K. The Southend S., Winchester
Brown, D.M.
Ladies' Coll., Wellington, Salop
Elliott, A.G. Wilber H., Biggleswade
Powell, E.E. Lulworth H., Caerleon
Fieldsend-Redman, M.J.
Norfolk Coll., Southsea
Hilson, C. Park Road S., Bingley
Weaver, F.M. Woolston Coll., Southampton
Notley, F.M. Private tuition
Wilson, A. Park Road S., Bingley
Hall, L. Westcliffe H., Poulton le Fylde
Johnson, B.A.
High School for Girls, Devonport
Chartres, G. North Park Coll., Croydon
Crawford, B.L. *s.*
Milton Mount Coll., Gravesend
Mudd, G.M. *d.*
Infant Orphan Asylum, Walthamstow
Phippard, B.M.
Ellerker Coll., Richmond Hill
Patricchio, M.N. Kensington H., Chiswick
Yardley, M.A.R. *s.*
Claughton Collegiate S., Birkenhead

SECOND CLASS [or JUNIOR].
Honours Division.

Jacoby, E.G. *s.e.h.f.* Crouch End High S., N.
Heywood, D.M. *g.f.mu.*
St. Monica's Girls' S., Herne Bay
Clothier, E.M. *a.ch.*
Woolwich Polytechnic, S.E.
Mockeridge, F.A. *gu.ch.d.*
Woolwich Polytechnic, S.E.
Watton, M.V. *s.*
Ladies' Coll., Wellington, Salop
Bishop, W.M. *a.*
Milton Mount Coll., Gravesend
Law, E. *al.* Chingford High S.
Pritchard, E.S. *s.f.d.*
Cornwallis High S., Hastings
Leach, F.I. *a.al.*
Beetham Street Higher Grade S., W.
Watts, L.D.H. *s.h.*
St. Bernard's S., Newton Abbot
Bliss, M.I. *s.a.ch.*
Grey Coat Hospital, Westminster
Talbot, C. *ch.* Private tuition
Crane, I.E. St. Helier's Coll., Shifnal
Howgego, M.E. *d.* Coborn S. for Girls, Bow
Cuzner, D. *d.mu.*
Stainsbridge Coll., Malmesbury
Evershed, A.F.C. *s.* Private tuition
Bailey, E.B. St. Bernard's Coll., Southsea
Jacques, E. St. Andrew's Hall, Southport
Armitage, G.d. St. Andrew's Hall, Southport
Davies, M. *a.el.*
Milton Mount Coll., Gravesend
Jackson, M. Coborn S. for Girls, Bow
Keily, B.L. Woolwich Polytechnic, S.E.
Bedloe, D. *d.*
Grey Coat Hospital, Westminster
Hodges, R. Private tuition
Metcalfe, J. *s.a.al.*
West End High S., Newcastle-on-Tyne
Rogerson, E.B.
Brooklyn H., Wellington, Salop
Sympson, G.J. Durham H., Eastbourne
Lee, E.V. *s.h* St. Bernard's S., Newton Abbot
Ahier, C.L.
Ashton H., St. Clement's, Jersey

SECOND CLASS [or JUNIOR].
Pass Division.

[1]Aveling, G. *ge.* Christ's Coll., Blackheath
[1]Clements, J.M. Ladies' Coll., Seaford
[1]Bunbury, E.M. *f.*
Home Glen, Strawberry Hill
[1]Loveless, W.M. *d.*
Friends' S., Saffron Walden
[1]Ball, F. Friends' S., Saffron Walden
[1]Page, W.M. Collegiate S., Worcester Park
[1]Jeffery, E.L. Private tuition
Epps, M. *a.f.* Wm. Gibbs' S., Faversham
Gunnis, B. Redby Girls' S., Sunderland
[1]Hardy, A.E. Eldon Coll., Thornton Heath
Pye, E.T. Woolwich Polytechnic, S.E.
Street, M. *f.* Babington H., Eltham
Spink, E.M. *d.* Arundel H., Scarborough
Braithwaite, D. *f.* Chingford High S.
[1]Robison, M.C. Girls' High S., Handsworth
Thompson, I. Mowbray S., Sunderland
Dimelow, M. *f.d.*
Ladies' Coll., Wellington, Salop
[1]Frith, L. *g.* Conv. of Loreto, Hulme
Lock, E.A. *d.* Higher Grade S., Old Hill
Marriott, A.A.
Addey & Stanhope S., New Cross, S.E.
Weaver, L.E. South Croydon College
Akers, E.W. The Limes, Buckhurst Hill
[1]Batt, E. *d.* Girls' Board S., Chepstow
Cortazzi, I.K.C. North Park Coll., Croydon
[1]Griffin, F. Convent F.C.J., Birkenhead
Johnson, H. St. Andrew's Hall, Southport
Jones, E.I. Church High S., Chepstow
Lyon, A.J. *ch.*
Grey Coat Hospital, Westminster
Hamlyn, E.E. *s.* The Red Maids' S., Bristol
Levitt, E.M.
Addey & Stanhope S., New Cross, S.E.
Lewis, R.H. West Ham High S.
Holman, A. St. Andrew's Hall, Southport
Lowe, A. *mu.*
Ladies' Coll., Wellington, Salop
[1]Shepperd, A.I.
Ashton H., St. Clement's, Jersey
Bills, M. St. Bernard's Coll. S., Southsea
Crosland, G. *ch.d.*
Penketh S., nr. Warrington
Harrington, A.E.B. *s.d.*
Lonsdale H., Norwich
Shields, A.D. *h.bk.* Alexandra Coll., Shirley
Alderson, A. St. Andrew's Hall, Southport
[1]Brierley, D.A.
Ladies' Coll., Wellington, Salop
[1]Read, M. Highfield S., Croydon
Taylor, D.M.
Linden Hall., Clapham Road, S.W.
Bailey, M. St. Bernard's Coll. S., Southsea
[1]Crowley, M. Convent F.C.J., Birkenhead
Foulds, M.E.
Pupil-Teachers' Centre, Kettering
Loasby, F.M.
Pupil-Teachers' Centre, Kettering
Sargent, D.U. *bk.d.* Verecroft, Devizes
[1]Harrison, F.I.B. *s.* Guelph Coll., Bristol
Young, D.F.M. The Leas, Cheetham Hill
McGregor, D.
Queen's Pk. Coll., Harrow Road, W.
Prior, E. Wm. Gibb's S., Faversham
Strawson, W.M. *f.* Fernside, Grantham
Anderson, M. *ch.*
Woolwich Polytechnic, S.E.
Nelson, L. St. Andrew's Hall, Southport
Ward, C. *s.* Arundel H., Scarborough
Wilshire, G.M. *f.*
Inst. for Girls, Wilson St., Derby
Bowditch, P.R. *s.*
Grey Coat Hospital, Westminster
Burleigh, P.E. *d.* Crescent Coll., York
Dickinson, J. St. Andrew's Hall, Southport
Morgan, I.M.
Milton Mount Coll., Gravesend
Seed, C.M. High S., Prestwich
[1]Whitton, G.J.D. Pencray Coll., Newport
Baty, I.V. *g.f.d.*
Milton Mount Coll., Gravesend
De Rougemont, E.A.
St. Bernard's S., Newton Abbot
Hale, K.S. Verecroft, Devizes
Nixon, B. St. Andrew's Hall, Southpor
Aldred, V.I.J. *d.*
The Southend S., Winchester
Bertram, R. Ashley H., Worksop
Jagger, C. St. Andrew's Hall, Southport
Jones, E.L. Westbourne H., Cowes
Naylor, A. Lynton H., Portsmouth
Riddle, B.M.
Pupil-Teachers' Centre, Kettering
Sanders, M.E.M. *s.*
Grey Coat Hospital, Westminster
[1]Walker, W.M.T.
Notting Hill High S., Norland Sq., W.
Watts, D.E. Ellerker Coll., Richmond
Acworth, E.E.A.
St. Monica's Girls' S., Herne Bay
Bailey, M.L. Fernside, Grantham
[1]Calderbank, M.
Westcliffe Coll., Southend-on-Sea
Lee, M. Fernside, Grantham
Mears, A.M. Muswell Hill High S., N.
[1]Ward, E.A. Welby Coll., Market Deeping
Westom, E.M.
Holly Bank S., Cheetham Hill
[1]Harris, F.C. Harley H., Hereford
Parsons, E.M. *f.* Private tuition
Wilshin, W.G. Howard Coll., Bedford
[1]Harris, O.K. Longford Girls' S., Bristol
[1]Malam, E.B.
10 & 12 Reginald Terrace, Leeds
Stewart, J. St. Andrew's Hall, Southport
Barry, M.I. The Red Maids' S., Bristol
Bell, J. *f.*
Pupil-Teachers' Coll., Everton Valley
Johnson, L.A. *bk.* London Coll., Stratford
Moore, E.E. The Red Maids' S., Bristol
Craze, C.V.G.
West Cornwall Coll., Penzance
Jarvis, M. Whitgift H., Croydon
Lees, S.E.G. High S., Cheadle
[1]Lunn, M. The Southend S., Winchester
Norris, J.E.D. *f.* Coborn S. for Girls, Bow
Perchard, L.M.
Ashton H., St. Clement's, Jersey
Rogers, L.S. The Red Maids' S., Bristol
Tilson, O.
Academy of the New Church, Brixton
Burrows, A.
Ladies' Coll., Wellington, Salop
Gay, E.M. *d.*
Milton Mount Coll., Gravesend
Hooley, T.M. *e.f.* Howard Coll., Bedford
Powell, D. *d.*
Intermediate S., Clewer St. Stephen
[1]Jones, W. Woking High S.
Lenton, M.K. High S., Thrapston
Lovegrove, D.M.
Grey Coat Hospital, Westminster
Pitchford, F.A.
Sunfield H., Wellington, Salop
[1]Ramsden, E.C. Private tuition
Watts, E.A. *s.* Charlton H., Brighton
[1]Bailey, M. Ashley H., Worksop
Daniel, W. St. Bernard's Coll.S., Southsea
Edmonds, A.M. Ellerker Coll., Richmond
[1]Gartrell, E. *s.*
Ville Guyon, St. John's, Jersey
Jones, D. Malvern H., Reading
Keen, E.G. Girls' Coll. S., Aldershot
Marshall, H. Ashley H., Worksop
Nangle, F. Adelphi H., Salford
Oates, D. Milton Mount Coll., Gravesend
[1]Phillips, H.M.
Ladies' Coll., Wellington, Salop
Treliving, S. Public Higher S., Stoke
Driscoll, N.E. *f.*
Ashton H., St. Clement's, Jersey
Evans, M.A. Coborn S. for Girls, Bow
Gill, R. Redby Girls' S., Sunderland
Hood, G.H. Ashley H., Worksop
[1]Lawton, M.F. Kensington H., Chiswick
Longhurst, C.G. *d.* Girls' Coll.S., Aldershot
Pledge, N. *a.* Public Higher S., Stoke
Tetlow, J. St. Andrew's Hall, Southport
Braithwaite, B.M.
Leicester Rd. S., Melton Mowbray
[1]Hickey, M. Convent F.C.J., Birkenhead
[1]Martin, D.B. Longford Girls' S., Bristol
Trudgian, H.M. *s.* The College, Totnes
Cameron, C.F. The Mount, Banbury
Hastings, E. Holly Bank S., Cheetham Hill
Stead, A. Girls' High S., Barnsley
Stiles, B. *bk.* Alpha H., Harringay, N.
Annacker, M. Conv. of Loreto, Hulme
Carter, H.M. St. Olave's, Taunton
Corbyn, E.E. Oakley High S., Southsea
[1]Mortimer, O. Woking High S.
[1]Wilkinson, M.H.M. Private tuition
Gardner, E.M. The College, Weston-s.-Mare
Irons, M.A.
Grey Coat Hospital, Westminster
Petrie, R. St. Andrew's Hall, Southport
Lawrence, E. Girtonville Coll., Aintree
Mann, J.F. Clifton H., Highgate, N.
Prior, V.A.
The Vicarage S., Clapham Common
Smith, J.M.M. Mayfield Coll., Marlborough
Wells, M.A. Milton Mount Coll., Gravesend
Allen, M.E. Harley H., Hereford
Brown, G. Friends' S., Great Ayton
Cox, S.M. The Vicarage S., Clapham Common
Donald, J.
Thomlinson Girls' Gram. S., Wigton
Edwards, E. High S., Oakengates
Henderson, W.I.
Milton Mount Coll., Gravesend
Strugnell, A.M.
Wordsworth Coll., Paddington
Wilson, L.A. St. George's H., Doncaster
[1]Annetts, E.N. Hillside S., Clifton
Grimes, E.S. Coborn S. for Girls, Bow
Halloway, M.V. Brunswick H., Carlisle
Humphreys, T.
Pupil-Teachers' Coll., Everton Valley
Merryman, A. Ashley H., Worksop
Nairne, M. Conv. of Loreto, Hulme
[1]Venn, E.M. Private tuition
Crabtree, D.L. *d.* Girls' High S., Handsworth
Hawkins, D.
St. Bernard's Coll. S., Southsea
McKean, N.B. Girls' Coll., Penmaenmawr
Palmer, M.E. Hemdean H., Caversham
[1]Small, M. Private tuition
Speller, V.M. High S. for Girls, Wanstead
Jordan, A. Convent of Loreto, Hulme
Lindsey, C.M. Longland Coll., Eastbourne
Volk, V. *f.ge.* Friedenheim, Ealing
Best, I. St. Andrew's Hall, Southport
Clarke, M.S. *s.*
St. Bernard's S., Newton Abbot
Fisher, K.D. *f.* West Ham High S.
Harris, J.G.E. Roan S., Greenwich
Hobson, V.E. Woolwich Polytechnic, S.E.
Nichols, G.B.A. Belvedere, Birkdale
[1]Richardson, E. Private tuition
Rimmer, E. St. Andrew's Hall, Southport
Roberts, A.E.C. Clarendon S., Bath
Cates, J.M. Muswell Hill High S., N.
Jones, W. Stainsbridge Coll., Malmesbury
Scorer, F.G. Mecklenburg H., Putney Hill
Simpson, B.E. Hemdean H., Caversham
Stewart, M. Inst. for Girls, Wilson St., Derby
[1]Thorne, D.G. Oakley High S., Southsea
Turner, H. St. Andrew's Hall, Southport
Wallers, M.J. Highfield, Wallington
Webb, G.G.E. Coborn S. for Girls, Bow

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GIRLS, 2ND CLASS, PASS—*Continued.*

Ainsworth, W. M. V. Clarendon S., Bath
Andrews, M. Fernside, Grantham
Barnett, L. E. Cornwallis High S., Hastings
Henniker, D. M. Bream Down H., Burnham
[1]Jackson, G. T. Granville H., Gravesend
Millar, E. J. *nat.*
Linden Hall, Clapham Road, S.W.
[1]Porter, A. M. Tinwald H., Heswall
Terrey, G. A. Bitterne H., Bitterne
Watson, M. Coborn S. for Girls, Bow
Whitfield, N.
Addey & Stanhope S., New Cross, S.E.
Garrett, G. A.
London Coll., Holloway Rd., N.
Malley, E. St. Andrew's Hall, Southport
Riding, E. *ch.* Woolwich Polytechnic, S.E.
Barton, F. N. Valley Bridge H., Scarborough
Martin, E. Sunfield H., Wellington, Salop
Pool, M. M. Mayfield Coll., Marlborough
Thompson, E. F. Private tuition
Thurston, B. H.
Westcliffe Coll., Southend-on-Sea
[1]Weever, F. South Croydon College
Wilson, M. E. M. *d.*
Grey Coat Hospital, Westminster
Booth, D. Hartington H., Beckenham
Challens, K. M.
Sunfield H., Wellington, Salop
Ellingford, M. F. West Ham High S.
Flower, E. M.
Ladies' Coll., Wellington, Salop
Hemsley, M. H. Brook Green Coll., W.
Hurst, M. Coborn S. for Girls, Bow
Jeffreys, E. B. St. Maur Coll., Chepstow
Phillips, E. M. High S. for Girls, Coventry
Ball, E. Grey Coat Hospital, Westminster
Berry, D. E. *d.* Barrfield S., Pendleton
Iensen, K. E. Wellington Coll., Hastings
Johnson, A. L. Friends' S., Saffron Walden
Tanner, M. Stainsbridge Coll., Malmesbury
Aplin, E. M. Castle Hill S., Maidenhead
Devereux, M. A Airedale H., Gravesend
Drake, M. Lynton H., Portsmouth
Matthews, E. L. Girls' High S., Handsworth
Pepperell, A. M.
Beaconsfield, Weston-s.-Mare
Vaughan-Williams, C. P.
Kensington S., Bath
Wareing, S. *d.* S. Andrew's Hall, Southport
Armstrong, I. H. *s.*
Thornbeck H., Darlington
Fairweather, E. Ashley H., Worksop
Gard, M. Public Higher S., Stoke
George, V. G. I. *d.*
Dagnall Park S., South Norwood
Goudeket, C. Coborn S. for Girls, Bow
Harvey, E. E. Westbourne H., Cowes
Herbert, E. St. George's H., Doncaster
Lacey, R. Kensington H., Chiswick
Laskey, H. M. Modern S., Torquay
Long, E. M. Collingwood, Paignton
Mitchell, C. A. *d.*
Gram. S. for Girls, Farnham
Sargent, E. C. St. Maur Coll., Chepstow
Slatter, E. B. Friedenheim, Ealing
[1]Bick, B. Eton House, Cheltenham
Gates, M.
The Vicarage S., Clapham Common
Hollick, M. A. High S. for Girls, Coventry
Hutley, T. Milton Mount Coll., Gravesend
Lindley, C. G. Girls' Coll., Penmaenmawr
Littlefair, R. Friends' S., Great Ayton
Mathew, K. M. North Park Coll., Croydon
[1]Peachell, E. M. Private tuition
Bauer, F. M. Bourne H., Eastbourne
[1]Eastwood, B. E. *s.* Duchy Court, Harrogate
Hinds, V. *f.* The Mount, Banbury
Moore, C. Convent F.C.J., Birkenhead
Peel, J. M. Castle Hill S., Maidenhead
Pullin, L. M. Brook Green Coll., W.
Strange, G. R. Clarence H., Filey
Triggs, E. Clough S., Reigate
Wilson, J. Mowbray S., Sunderland
Aspden, M. Milton Mount Coll., Gravesend
Chapman, B. Ashley H., Worksop
Draper, M. D. Clare H., Northampton
Earnshaw, A. V. High S., Cheadle
Garrett, H. W.
London Coll., Holloway Rd., N.
Goslard, E. A. West Ham High S.
Gombant, J. M. *f.* St. Andrew's Conv., Jersey
Grimmer, J. M.
Wordsworth Coll., Paddington
Hampshire, E. Girls' High S., Rothwell
Lucas, D. Emwell S., Warminster
Needs, W. I. St. Winifred's, Southampton
[1]O'Reilly, K. St. Ethelburga's, Deal
Scott, B. Loretto H., Highgate, N.
Smith, M. C. Milton Mount Coll., Gravesend
Tyler, D. A. Oakover Girls' S., Burnham
Barnard, M. Burstead H., Billericay
Butcher, F. Quarry H., Guildford
Gaskin, M.
Melbourne Coll., Thornton Heath
Gulston, G. M. Sittingbourne College
Marsh, D. E. Alexandra Coll., Shirley
Thomas, I. M. High S., Whitchurch
Williams, F. S.
Brooklyn H., Wellington, Salop
Darley, G. L. A.
Milton Mount Coll., Gravesend
Hall, S. E. Friends' S., Saffron Walden
Holbrook, A. M. Hanover H., Ryde
Kelsall, J. M. *f.* Private tuition
Lewis, E. M. *h.*
Milton Mount Coll., Gravesend
Longbottom, C. L. *d.*
Beecholme Coll., Belper
Nutley, E. M. Vale View H., Devizes
Palmer, E. N.
Felix High S., Wandsworth Common, S.W.
Roberts, V. E. Harley H., Hereford
Spencer, D. *d.* Wellington Coll., Hastings
Tweedie, E. K. Wellington Coll., Hastings
[1]Busby, E. O. C. Private tuition
Clarke, F. E. West Ham High S.
Hainsworth, M. A. High S., Dore
Harris, P. E. *s.*
Intermediate S., Clewer St. Stephen
Heron, J. E. Coborn S. for Girls, Bow
Hunt, M. Addiscombe, Barnstaple
McKenzie, N. Westcliffe College, Whitby
Spicer, E. M. St. Winifred's, Torquay
Whitworth, D. L. High S. for Girls, Wanstead
Brookes, V. A. Beecholme Coll., Belper
Chesterman, O. *f.*
Westcliff, Weston-s.-Mare
Chesterman, R. Westcliff, Weston-s.-Mare
Fox, B. Wm. Gibbs' S., Faversham
Gardner, K. M. The College, Weston-s.-Mare
Hudson, D. H. Clyde H., Holloway, N.
Pemberton, E. Private tuition
Risk, R. N.
The Convent, The Avenue, Southampton
Cunningham, P. M. Clarendon S., Bath
Fletcher, E. M. Wilber H., Biggleswade
[1]Griffiths, C. L. Preswylfa Girls' S., Cardiff
Musk, G. C. High S., Whitchurch
Rudwick, E. M. *d.*
Stafford H., Nightingale Lane, S.W.
Tee, D. M. Private tuition
Atkins, R. E.
Intermediate S., Clewer St. Stephen
Blanchard, G. E. Clarendon S., Bath
[1]Bull, H. M. E. Private tuition
Jacobs, L. E. M. D.
Northern Polytechnic Day S., N.
Jenkinson, G. Ashby H., Worksop
Wheeler, B. M.
Dagnall Park S., South Norwood
Wilkins, N. E. Wrington National S.
Goaziou, A. *f.*
La Frontiere, St. Mary's, Jersey
[1]Munn, A. J. Inwood, Hale
Pate, A. M. High S. for Girls, Wanstead
Pritchard, J. High S., Whitchurch
Russell, E. F. High S. for Girls, Wanstead
Saddler, E. L. Cornwallis High S., Hastings
Scarth, S. Friends' S., Great Ayton
Shaw, S. H.
11 & 12 Richmond Rd., Headingley
Simpson, A. M. Crescent Coll., York
Champion, W. Woking High S.
Honey, H. M.
Battersea Polytechnic Science S., S.W.
Housden, W. M. Tinwald H., Heswall
[1]Junor, K. E. Duchy Court, Harrogate
Malings, M. M. Alexandra Coll., Shirley
Robinson, E. G. N. London Coll. S. for Girls
Sykes, F. M.
11 & 12 Richmond Road, Headingley
Ward, E. E. The Crescent S., Selby
Yeates, N. M. High S., Stourbridge
Yull, E. K. Bleak H., Brentwood
Burtt, E. B. Stantway, Balham, S.W.
Chown, W. Hemdean House, Caversham
Jones, E. J. Harley H., Hereford
Myhill, O. M. Lonsdale H., Norwich
Passmore, N. I.
Felix High S., Wandsworth Common, S.W.
Robinson, G. B. Rose Bank, Brentwood
Tomlinson, W. Woking High S.
Carr, E. Coborn S for Girls, Bow
Graves, G. V. Hanover H., Ryde
Law, E. Hindley Gram. S.
Marshall, W. Alwyne Coll., Canonbury, N.
Stevens, G. E. G. Private tuition
Whitworth, K. M.
High S. for Girls, Wanstead
Winter, F. E. Highfield, Wallington
Aldred, B. V. Modena H., West Ealing
Carter, E. Grey Coat Hospital, Westminster
Nelson, M. B. Friends' S., Wigton
Copeland, F. M.
Inst. for Girls, Wilson St., Derby
Corcoran, B.
Pupil-Teachers' Coll., Everton Valley
Hawke, E. Home Park S., Stoke
Hind-Wood, K. E.
North Park Coll., Croydon
Lansdowne, D. M.
Milton Mount Coll., Gravesend
Wolstenholme, B. Hindley Gram. S.
[1]Eltringham, C. M.
Alexandra Coll., Hastings
Giddings, E. D. Vale View H., Devizes
Liles, E. Academy, Crewe
Murray, K.
Pupil-Teachers' Coll., Everton Valley
Nicoll, F. Whitgift H., Croydon
Watson, B. G. E. Wellington H., Blyth
Whitehouse, K. D.
40 Houghton Rd., Handsworth
Addyman, J. D. Inglewood, Bramhall
Barette, F. A.
Six Roads S., St. Lawrence, Jersey
Brown, M.
10 & 12 Reginald Terrace, Leeds
Godfrey, E. M. S. Summerbrook, Reading
[1]King, O. A. Hillside S., Clifton
Lovell, D. M. High S., Whitchurch
McNulty, N.
Pupil-Teachers' Coll., Everton Valley
Mills, G. 40 Houghton Rd., Handsworth
Moore, E. Castle Dene S., Newport, I.W.
Thomas, N. A.
Summerfield Hall, Maesycwmmer
Williams, S. M. Lulworth H., Caerleon
Cull, E. L. Tavistock H., Sheerness-on-Sea
Findlay, A. S.
10 Holly Road, Fairfield, L'pool
Gibbon, D.
Thorntonville S., Thornton Heath
Heff, E. H. Dagnall Park S., S. Norwood
King, G. Girls' High S., Sudbury
Collins, E. S. A.
Mayfield Coll., Marlborough
Gartrele, O. *f.*
Ville Guyon, St. John's, Jersey
Holden, A. A. H. Girls' High S., Chard
Legge, I. W. Milton Mount Coll., Gravesend
Liston, C. Adelphi H., Salford
Maplesden, M. Woking High S.
Menard, J. Adelphi H., Salford
[1]Moore, F. Branstone H., Newport
Naylor, E. *d.* Park Rd. S., Bingley
Scroggie, H. M.
Felix High S., Wandsworth Common, S.W.
Steel, C. M. Fernside, Grantham
Adams, G. M. Collegiate S., Acocks Green
Goodman, G. I.
Westcliffe Coll., Southend-on-Sea
Marshall, E. Coborn S. for Girls, Bow
White, A. Ashleigh H., Tutbury
Ackerman, A. L. G.
Linsted Coll. S., Greenstreet, Sittingbourne
[1]Bailey, E. Linden H., Hendon
[1]Bickle, B. E. Headland Park S., Plymouth
Griffiths, S. M. Coborn S. for Girls, Bow
Rendell, M. G. St. Winifred's, Southampton
Baines, M.
Pupil Teachers' Classes, Mt. Pleasant, L'pl.
Rees, E. R. Dagnall Park S., S. Norwood
Repen, J. St. Aloysius' Convent, N.W.
Crisp, E. M. High S. for Girls, Coventry
Kendall, N.
St. Helen's Roman Catholic S., Southend
Langston, W. E. Clevedon Lodge, Reading
Lynch, E. Adelphi H., Salford
Matheson, C. M.
Houndiscombe S., Plymouth
McCrory, E. Adelphi H., Salford
Mills, N. S.
Clark's College Girls' S., Brixton Hill
Fidduck, M. St. Andrew's Hall, Southport
Scott, S. Pencray Coll., Newport
Swain, A. A.
Addey & Stanhope S., New Cross, S.E.
Bennett, B. Public High S., Stoke
Brown, W. E. West View, Highbridge
Franklin, M.
Pupil-Teachers' Classes, Mt. Pleasant, L'pl.
Glover, M. Convent F.C.J., Birkenhead
[1]Godfrey, W. Woking High S.
Kirkpatrick, S. M. Upper Mount, Southsea
Latham, R. Roden H., Ongar
LeGresley, E.
Chestnut Farm, St. Mary's, Jersey
Ricks, A. P. Private tuition
Stubbs, C. I. Dagnall Park S., S. Norwood
Wright, E. M.
Linden Hall, Clapham Rd., S.W.

THIRD CLASS.
Honours Division.

Wallis, L. *s.e.h.g.a.d.*
Goodrich Rd. S., E. Dulwich
Mack, A. *s.e.h.g.a.bk.f.*
Fulford Field H., York
Gibbs, D. *s.e.h.g.a.d.*
Gavine H., Portsmouth
Attwell, O. J. *s.e.h.g.a.gm.f.*
The Red Maids' S., Bristol
Cole, E. M. *s.e.h.g.a.bk.*
Home Park S., Stoke
Leake, S. K. *s.h.g.f.d.* Private tuition
Wise, M. *s.g.a.f.* Private tuition
McKenzie, A. J. C. *e.h.g.f.d.*
Arundel H., Scarborough
Spink, M. *e.h.g.a.d.*
Arundel H., Scarborough
Brown, M. C. *s.e.g.* Fulford Field H., York
Braithwaite, M. *s.g.*
Goodrich Road S., E. Dulwich
Forbes, G. H. *e.g.f.d.*
Kensington H., Chiswick
Gurney, W. *e.a.d.*
Goodrich Rd. S., E. Dulwich
Harvey, M. R. *e.f.*
Northcote H., Crouch Hill, N.
Ostler, W. M. *g.d.*
Anglo-French Girls' S., Bristol
Piggott, M. E. *s.e.g.d.*
Royal Masonic Inst. for Girls, S.W.
Shoesmith, E. M. *e.g.f.d.*
Holy Trinity Hr. Grade Girls' S., Halifax
Watts, H. *e.a.f.*
Goodrich Road S., E. Dulwich
Bennett, E. M. *g.f.d.*
Milton Mount Coll., Gravesend
Bird, L. E. *s.e.g.a.d.*
Somerville H., Northampton
Marriott, H. A. *s.e.h.g.*
Leicester Road S., Melton Mowbray
Moore, G. E. E. *e.g.a.*
Ladies' Coll., Wellington, Salop
May, F. *e.g.a.d.*
Goodrich Road S., E. Dulwich
Perkins, E. *g.* High S., Syston
Smerdon, E. I. *s.e.g.a.*
Regent St. Higher Grade S., Plymouth
Swinstead, V. E. *e.g.f.* Private tuition
Wallis, H. M. *e.* Alexandra Coll., Shirley
Garratt, M. *s.g.*
Goodrich Road S., E. Dulwich
Greenwood, C. W. *g.a.f.*
Arundel H., Scarborough
Haddow, H. M. *e.g.a.*
Middle Class S., High Wycombe
Johnson, S. F. *e.h.g.a.f.d.*
High H., Priors Marston
Farrant, A. M. *s.e.g.*
Grosvenor S., Wokingham
Rawling, L. B. *g.a.* Arundel H., Scarborough
Tanqueray, M. C. *e.g.f.d.*
Highfield Coll., Blackpool
Arnold, W. K. *e.g.a.d.*
Ladies' Coll., Wellington, Salop
Brown, C. I. *s.e.g.d.* St. Hilda's, Gosforth
Johnson, D. *e.g.al.*
St. Andrew's Hall, Southport
Whinnerah, L. A. *s.g.*
Crossley & Porter Girls' S., Halifax
Browning, L. *a.* Whitgift H., Croydon
Irvine, J. *a.d.* Convent F.C.J., Birkenhead
Lumley, W. F. E. *s.e.a* Woodside, Hastings
Allen, S. E. *a.d.* Hemdean H., Caversham
Key, D. M. *e.g.* Chislon H., Ramsey, Hunts.
Swinburne, D. H. *e.f.d.*
Camden S. for Girls, Kentish Town, N.W.
Thomas, G. M. *e.g.d.*
Holy Trinity Hr. Grade Girls' S., Halifax
Wade, E. I. *s.e.d.* Burgess Hill High S.
Windsor, R. M. *e.g.a.d.*
High S. for Girls, Wanstead
Arnold, J. K. *d.* Wellington S., Deal
Benrose, M. L. *g.a.d.*
Ladies' Coll., Wellington, Salop
Edmunds, G. M. *s.g.*
Ladies' Coll., Wellington, Salop
Hodgson, C. *a.d.*
Holmwood Coll., Westcliff-on-Sea
Hodgson, V. *e.h.g.d.*
Holmwood Coll., Westcliff-on-Sea
Holden, A. *e.g.d.*
St. Andrew's Hall, Southport
Lindsell, L. E. *e.a.* West Ham High S.
Richard, R. M. J. *f.* Private tuition
Hopper, L. M. *e.g.a.f.*
Arundel H., Scarborough
Palmer, E. M. *e.g.a.d.*
Ellerker Coll., Richmond
Rushton, G. *g.a.*
St. Andrew's Hall, Southport
Southworth, B. *e.g.f.d*
St. Andrew's Hall, Southport
Baldrey, D. G. *e.a.d.*
Camden S. for Girls, Kentish Town, N.W.
Cowe, L. D. *f.* Milton Mount Coll., Gravesend
Krimont, C. *e.g.f.* Tivoli H., Gravesend
Parry, J. *e.g.mu.*
High Bank Ladies' S., Altrincham
Rose, A. *e.g.* St. Andrew's Hall, Southport
Traylor, A. M. I. *s.e.g.f.*
Bryn Holly, Newport
Baker, E. *g.* Goodrich Rd. S., E. Dulwich
Cook, M. *e.g.*
New Benwell Council S., Benwell-on-Tyne
Fletcher, I. E. *e.* High S. for Girls, Coventry
Frances, E. L. *h.a.* Tivoli H., Gravesend
Shield, M. H. *e.g.f.* Grange S., Ealing
Barton, E. *e.* Milton Mount Coll., Gravesend
Brown, H. G. *g.f.ge.d.* The Mount, Banbury
Hall, O. A. *bk.* Roden H., Ongar
Hayman, E. *e.a.d.* High S., Teignmouth
Holmes, C. F. *e.a.*
Westbourne S., Westbourne Pk., W.
Low, V. *e.d.* Alexandra Coll., Shirley
Newman, H. F. *e.f.ge.d.*
Greenhill Pk. Coll., Harlesden
Pether, L. M. *e.* Waldron H., Havant
Walger, L. L. H.
Dunmore S., St. Leonards-on-Sea
Brook, D. *d.*
Holy Trinity Hr. Grade Girls' S., Halifax
Foyle, G. L. *g.f.* Alexandra Coll., Shirley
Harman, W. M. *e.g.f.* Private tuition
Leonard, C. E. *s.e.g.*
Oakover Girls' S., Burnham
Reid, E. W. *e.g.f.d.*
Crossley & Porter Girls' S., Halifax
Toms, E. E. *e.g.a.* Bronshill S., Torquay
Turner, E. Beechcroft Coll., Richmond
Burford, E. *s.e.a.* Ashley H., Worksop
DeSilva, J. William Gibbs' S., Faversham
Duckworth, D. *a.d.*
St. Andrew's Hall, Southport
Loxton, G. H. *g.a.*
Ladies' Coll., Wellington, Salop
Richardson, M. *e.g.* Cambridge H., Preston

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GIRLS, 3RD CLASS, HONS.—*Continued.*

Williams, M.G. *e.d.*
High S. for Girls, Devonport
Amsden, D. *e.h.g.d.*
High S. for Girls, Rochdale
Blanchard, F.M. *s.g.f.* Clarendon S., Bath
French, E.M. *c.g.d.* The College, Totnes
Jewell, N.D. *e.g.a.* Kensington H., Chiswick
Johnson, N.H. *e.g.* Girtonville Coll., Aintree
Bemrose, A.M. *s.g.*
Ladies' Coll., Wellington, Salop
Coles, G.M. *d.* Highfield S., Croydon
Crosby, R. *s.g.m.*
New Benwell Council S., Benwell-on-Tyne
Crowhurst, M.M. *e.d.* Burgess Hill High S.
Dickinson, E. *s.g.g.m.d.*
New Benwell Council S., Benwell-on-Tyne
Ford, E. *d.* Stainsbridge Coll., Malmesbury
Holman, L. *g.d.*
St. Andrew's Hall, Southport
Leak, S.J. *g.f.d.* Private tuition
Martin, G. *e.g.d.* Public Higher S., Stoke
Ruddin, L. *g.f.* Conv. of Loreto, Hulme
Shelton, G. *h.g.*
Chislon H., Ramsey, Hunts.
Swan, M. Mowbray S., Sunderland
Atkins, F.E. *e.g.f.*
Camden S. for Girls, Kentish Town, N.W.
Bleasby, C.A. *d.* Clarendon H., Southport
Bracher, S.M. *e.d.*
Camden S. for Girls, Kentish Town, N.W.
Cheer, A. *s.e.d.* Howard Coll., Bedford
Hain, M.M. *s.g.*
Crossley & Porter Girls' S., Halifax
Harrison, L.M. *s.e.g.*
Ladies' Coll., Wellington, Salop
Holford, D.M. *s.g.d.* St. Hilda's, Gosforth
Irvine, A.W. *s.* Wandsworth H., Heaton
Lambert, D. *g.*
St. Bernard's Coll. S., Southsea
Lucas, G. *e.g.f.* Conv. of Loreto, Hulme
Malings, C.E. *d.* Alexandra Coll., Shirley
Muggeridge, H.R. *s.e.*
Durham H., Eastbourne
Pearson, E.W. *s.h.*
Royal Masonic Inst. for Girls, S.W.
Simister, G.B. *e.d.* Waldron H., Havant
Simons, G.R. *e.g.d.* Hatfield Coll. S.
Bramble, A. *g.d.*
New Benwell Council S., Benwell-on-Tyne
Bryan, M.L. *e.d.*
South Norwood High S., S.E.
Clemson, H. *a.f.d.* Duchy Court, Harrogate
Harvey, D. *s.e.g.d.* Bellevue, Herne Bay
Thompson, F.E.V. *d.*
Girls' Coll., Penmaenmawr
Banks, D.I. *g.d.* Camden H., Biggleswade
Bauser, L.R. *e.f.* High S. for Girls, Coventry
Barber, E.M. *e.g.*
Ladies' Coll., Wellington, Salop
Bishop, D. *s.* Frenchay Lodge, nr. Bristol
Corbett, C.M.E. *e.*
Ladies' Coll., Wellington, Salop
Fielder, E. *s.e.d.* British S., Wokingham
Hodes, D. *e.* Goodrich Rd. S., E. Dulwich
Marchment, F. *d.* Lynton H., Portsmouth
Matthews, A. Roden H., Ongar
Austin, M. *d.* Conv. of Loreto, Hulme
Bird, J. *g.*
Crossley & Porter Girls' S., Halifax
Brookes, I. *a.*
Regent St. Higher Grade S., Plymouth
Chettle, D.R. *e.* Fellenberg S., Maidstone
Dobson, I. *e.g.d.* Blenheim H., Olton
Felton, M.I. *e.g.*
Royal Masonic Inst. for Girls, S.W.
Garnett, M.D. *e.g.d.* Private tuition
Higgins, A. *g.* Adelphi H., Salford
Linnell, E.M. Somerville H., Northampton
Lush, E.L. *s.a.d.* British S. Wokingham
Mudge, M.L. *e.* Gavine H., Portsmouth
Qualtrough, G.L. *e.g.*
Girtonville Coll., Aintree
Ravell, A.E. *s.e.* Fernside, Grantham
Stokes, D. *e.g.* Wilber H., Biggleswade
Warner, F.A.
Holmwood Coll., Westcliff-on-Sea
Ballantyne, E.McC.
Harringay Park S., Hornsey, N.
Bond, W. *s.* Weirfield S., Taunton
Brooks, E.A. *d.*
Royal Masonic Inst. for Girls, S.W.
Burrell, D.M.
Crossley & Porter Girls' S., Halifax
Byrne, C. *e.* Adelphi H., Salford
Calvert, A.M. *g.e.*
Crossley & Porter Girls' S., Halifax
Copsey, D.H. *e.d*
Camden S. for Girls, Kentish Town, N.W.
Court, H. *e.d.* Wm. Gibbs' S., Faversham
Cross, M. *g.a.*
New Benwell Council S., Benwell-on-Tyne
Dix, J. *e.g.* 10 & 12 Regimald Terrace, Leeds
Dodd, A.M. *s.e.g.*
Royal Masonic Inst. for Girls, S.W.
Fotherby, G. Wandsworth H., Heaton
Hewett, E.E. *d.* Glenarm College, Ilford
Moore, M.A. *e.g.d.* Wilber H., Biggleswade
Ramsay, J.M. *q.d.*
Haslemere, Clapham Park, S.W.
Rimmer, C. *e.h.* Adelphi H., Salford
Sinnock, M.K. Burgess Hill High S.
Watts, F.E. *d.* Charlton H., Brighton
Bathurst, E.A.
Brooklyn H., Wellington, Salop
Bloye, D. Public Higher S., Stoke
Brown, K.W. *s.g* Woodside, Hastings
Cambrook, W.A. *a.d.*
Camden S. for Girls, Kentish Town, N.W.
Clark, M.G. *s.e.d.* Ladies' Coll., Deal
Cole, A.I. *d.* St. Kilda's Coll., Bristol
Course, F.A. *g.* Towcester School
Francis, D. *a.d.*
Stainsbridge Coll., Malmesbury
Free, M.C. Mayfield Coll., Marlborough
Hardy, E. *d.* Goodrich Rd. S., E. Dulwich
James, W.A. *e.* Westbourne H., Cowes
Kemp, M.P. *e.*
Westcliff High S., Poulton-le-Fylde
Mattingly, P.G. *f.d.*
Girls' High S., Sudbury
Newman, F.M. *s.e.g.*
Ladies' Coll., Wellington, Salop.
Saint, M.A. Hyde House, Tollington Pk., N.
Salter, E.A.
Ivy House Coll. S., Crouch Hill, N.
Walsh, A. Home Pk. S., Stoke

THIRD CLASS.

Pass Division.

²Bloomfield, N.C. *s.f.m.*
Woodside, Hastings
²Perry, E. *f.* Elm Lodge, Petersham
²Burton, M. Lonsdale H., Norwich
²Gawlor, G.M. The Red Maids' S., Bristol
²Newman, E.E.
Greenhill Pk. Coll., Harlesden
²Gray, R. Cleveland H., Lower Clapton, N.E.
²Cane, M. Stainsbridge Coll., Malmesbury
²Cooper, H.S. Mountside High S., Hastings
²Althaus, G.I. *f.*
Langland Coll., Eastbourne
²Gilbert, A.E. Howard Coll., Bedford
²Harrison, M. Lyndale Coll., Worthing
²Schwar, E.L. Germania Coll., Canonbury
²Tuck, M.E. Mansfield H., Maida Vale
²Smith, C.O.S. Ellerker Coll., Richmond
²Ingram, M.M.E. West Ham High S.
²Jalland, R.E.
The Red Maids' School, Bristol
²Vidal, M.F.A.
Notting Hill High S., Norland Sq., W.
²Hyde, E.C. Lyndale Coll., Worthing
²Parker, A.F. Girls' Coll. S., Aldershot
²Kirby, E. Stainsbridge Coll., Malmesbury
²Tooley, G.W. *s.* Fernside, Grantham
²Swan, E. Mowbray S., Sunderland
²Swinden, D.C. Ellerker Coll., Richmond
²Box-Marychurch, M.
St. Maur Coll., Chepstow
²Cowe, A.M. *s.h.*
Milton Mount Coll., Gravesend
²Guille, D. Stainsbridge Coll., Malmesbury
²House, N. Alexandra Coll., Shirley
²Jesse, E.E. Girtonville Coll., Aintree
²Maxted, N. Wm. Gibbs' S., Faversham
²Wheeler, C.L. Quarry H., Guildford
²Shearer, C.L. Alexandra Coll., Shirley
²Hall, G. Elm Lodge S., Leytonstone
²Leonard, E.B. Stantway, Balham, S.W.
²Wadman, G.K. Verecroft, Devizes
²Fargus, E.R.J.
Home-Glen, Strawberry Hill
²Jones, G.O. Private tuition
²Escolme, A.P. Penketh S., nr. Warrington
²Hills, D.G. Clydesdale, East Finchley
²Jacoby, K.A. *s.* Wandsworth High S
²Jones, E.M.
Cranley H., Muswell Hill, N.
²Hunt, H.B. High S., Teignmouth
²Venement, M.L.
Ashton M., St. Clement's, Jersey
²Churchill, I.P. Upper Mount, Southsea
²Grigg, N.A. St. Kilda's Coll., Bristol
²Keen, A. Milton Mount Coll., Gravesend
²Moreton, S. Girls' S., Brewood
²Greenway, G.N. West Ham High S.
²McKechnie, C.M.
Brooklyn High S., Leytonstone
²Oliver, I.D.H.
Hyde House, Tollington Pk., N.
²Vicary, D.C.J. St. George's H., Wimbledon
²Watson, B. Alpha H., Harringay, N.
²Bowerman, M.
Stainsbridge Coll., Malmesbury
²Bull, A.M. Friends' S., Saffron Walden
²Wilton, M. Mayfield Coll., Marlborough
²Wood, I.A.E. Milton H., Atherstone
Anderson, E. *e.g.a.*
Convent F.C.J., Birkenhead
²Beaugeard, S.L. St. Andrew's Conv., Jersey
Cockrill, W.S. *g.a.d.*
Wilber H., Biggleswade
Cordukis, D.A. *s.e.g.* Abbey H., Selby
²Cullum, M.L.
The Convent, The Avenue, Southampton
Daly, E. *d.*
Franciscan Convent, Clacton-on-Sea
²Francis, E.
African Training Inst., Colwyn Bay
Guthrie, B. *g.*
New Benwell Council S., Benwell-on-Tyne
Holden, M. *g.*
St. Andrew's Hall, Southport
Howell, D.M. *e.g.*
Ladies' Coll., Wellington, Salop
Knowles, M. *e.g.a.* Crescent Coll., York
Lane, I.F. *s.e.g.* Fernside, Grantham
Todd, A. *s.f.* Purcell H., Scarborough
²Andrews-Bligh, V.M.
St. Giles's Choir S., Barnet
²Clark, G.P. Girls' High S., Sudbury
Coleman, M. Colehill S., Tamworth
Denness, N.K.d. Alexandra Coll., Shirley
²Fletcher, M.M. Wilber H., Biggleswade
Griffiths, D. *g.*
St. Lawrence's Inter. S., Long Buckby
²Henderson, D.L. Loretto H., Highgate, N.
²Hilton, O. St. Andrew's Hall, Southport
Lomas, D. *g.*
Inst. for Girls, Wilson St., Derby
Peto, G.E. *s.e.* Castle Hill S., Maidenhead
Pickering, D.K. *g.*
Crossley & Porter Girls' S., Halifax
²Reira, D. St. Andrew's Hall, Southport
Rogers, W.H. *g.* Bleak H., Brentwood
Sayer, M.F. Grosvenor S., Wokingham
Skelsey, M. *e.g.*
3 Stainbeck Lane, Chapeltown
Thomas, E.M. *s.d.* Weirfield S., Taunton
Welch, G.F. *g.f.* Lexden H., Brixton, S.W.
²Wheeler, T.E. Westbourne H., Cowes
Anderson, C.C. *e.d.*
Camden S. for Girls, Kentish Town, N.W.
Birch, R.F.F. *e.a.f.*
Royal Masonic Inst. for Girls, S.W.
Green, E. Milton H., Sunderland
Griffiths, G.D. *s.* Church High S., Chepstow
Hain, A.M. *g.d.*
Crossley & Porter Girls' S., Halifax
²Hall, C.I. The Magnolias, Southsea
Jacobs, B. *e.*
Germania Coll., Canonbury, N.
²Keay, W.E. St. Winifred's, Southampton
²Kidd, M. Woolwich Polytechnic, S.E.
Mann, A.D. *g.* Clifton H., Highgate, N.
Matthews, K.E. *s e.g.d.* Elm View S., Exeter
McOwan, M. Corner House S., Godstone
Mott, E.H. *e.g.d.* Burstead H., Billericay
²Newton, E. Girls' High S., Rothwell
Picot, M. *f.d.* Kibworth, Jersey
²Ray, F.E. Alexandra Coll., Shirley
Webb, F.C. *g.* Oakover Girls' S., Burnham
White, E.J. *e.* Old Bank H., Castle Cary
Willmott, E.
Penrith High S., Stamford Hill, N.
Willmott, E.D. *e.d.*
Royal Masonic Inst. for Girls, S.W.
²Alexandre, C. *f.* St. James's Coll. S., Jersey
Beckhuson, M. Private tuition
²Clark, E.L.L.
Melbourne Coll., Thornton Heath
Dunford, M.L. *s.*
Wordsworth Coll., Paddington
²Ereaut, M.I. *d.* Private tuition
Glassborow, F.E. Lyndale Coll., Worthing
Herz, M. Hyde House, Tollington Pk., N.
Holdinott, A.F.
Mayfield Coll., Marlborough
Lockington, G.E. *a.f.d.*
The College, Harlesden
²Mears, M.M. Hanover H., Ryde
Midgley, M.E. *s.a.*
Crossley & Porter Girls' S., Halifax
Parks, M. *s.e.g.* Fernside, Grantham
²Porter, A.S. Emwell S., Warminster
Saunders, W.M. Trinity Coll., Tulse Hill
Saward, E.A. *g.*
Stapleton Hall S., Stroud Green, N.
²Scholes, D. *f.* Upper Mount, Southsea
²Sheehan, K.
Lansdowne Coll., Notting Hill, W.
Simmonds, M.M. *e.g.*
Darnley House, Gravesend
Skeif, H.N. Chislon H., Ramsey, Hunts.
Staeger, M.I. *e.*
Crossley & Porter Girls' S., Halifax
Williams, E.I. Private tuition
Young, H.M. *g.d.* Abercorn Coll., Dublin
Abrahams, B.M. *d.* Alexandra Coll., Shirley
Brook, F.L. *e.h.* The College, Totnes
²Carus-Wilson, B.
Home Glen, Strawberry Hill
Chislett, M.C. *e.f.* Selwood S., Frome
Davenport, F.M. *d.*
Crossley & Porter Girls' S., Halifax
Ellis, D. *e.g.d.* Academy, Crewe
Fraser, L.
New Benwell Council S., Benwell-on-Tyne
Gillespie, E. Adelphi H., Salford
Hirst, I. St. Andrew's Hall, Southport
Juson, N. *e.d.*
High Bank Ladies' S., Altrincham
Lane, N.G. *s.d.* Frenchay Lodge, nr. Bristol
Lawes, D.G. *e* Girls' Coll. S., Aldershot
²Marshall, D.D.
11–12 Richmond Rd., Headingley
²Mavity, M.E. *bk.* Roden H., Ongar
May, R. *g.* Priory Farm S., Earls Colne
Mills, E. *e.f.d.* Conv. of Loreto, Hulme
Riley, D.K. *d.* Girls' Coll. S., Aldershot
Tipper, S.M.
Beauclerc S., Sunbury-on-Thames
²Townley, D.M.
Alwyne Coll., Canonbury, N.
Travis G. *e.d.* St. Andrew's Hall, Southport
Ward, L. *s.* Cambridge H., Preston
Wilkinson, L. *g.*
31 Brigstock Rd., Thornton Heath
Wyatt, J.E.M. Crouch End High S., N.
Anderson, A.A. Ladies' Coll., Margate
²Beecham, P.W. High S., Thrapston
²Bentley, A.E. Hartington H., Beckenham
Broodhurst, G.B. *e.g.*
Ladies' Coll., Wellington, Salop
Broker, T. *e.d.* Ladies' Coll., Margate
²Challinor, E.H.
Newton Heath S., Middlewick
Dunlop, M.O. *e.d.*
Coll. S., Stanford-le-Hope
²Fowler, C.E. Pontypridd County S.
Hunt, G.M. Elsmere S., Reading
James, W.F. *d.* Maindee Lawn S., Newport
²Knott, F.R.
Stainsbridge Coll., Malmesbury
²Molyneux, M. Durham H., Eastbourne
Mundy, R.K. *e.g.f.* Clarendon S., Bath
Newling, J.M. *e.d.* Fernside, Grantham
Rowdon, L.E.S.
Gordon Sq. S. for Girls, W.C.
Shakespeare, A. *s.d.* Bank H., Ashburne
Smith, M.E. *e.a.*
Royal Masonic Inst. for Girls, S.W.
Stevens, M.H. *e.*
Milton Mount Coll., Gravesend
Armitage, M. *s.g.f.* Duchy Court, Harrogate
Barker, E.A. *s.*
Brooklyn H., Wellington, Salop
Blake, E. *e.a.d.* Beechcroft Coll., Richmond
²Causfield, G.M. Friends' S., Saffron Walden
²Clarke, P.L. Dagnall Park S., S. Norwood
²Colson, W.M.
The Southend S., Winchester
Couldrey, M. *e.f.* Collingwood, Paignton
Dudley, M.M. *e.d.* Howard Coll., Bedford
Gray, M.P. *g.*
Royal Masonic Inst. for Girls, S.W.
Hawkstied, E.B. *e.g.* Private tuition
²Hime, M. Wm. Gibbs' S., Faversham
²Knott, G.N. *f.* 4 Royal Crescent, Jersey
Land, E.A. *a.* Bronshill S., Torquay
Longstaff, E.W. *g.d.* Abbey H., Selby
²Matthews, G.L. Westbourne H., Cowes
Picot, H. *f.* Kibworth, Jersey
Price, E. *a.*
Queen Anne's Coll. Southend-on-Sea
Raban, M.F.W. Frenchay Lodge, nr. Bristol
Randall, E. *e.g.* Academy, Crewe
²Row, E.M. Girls' High S., Sudbury
Usher, M. *g.* St. Hilda's, Gosforth
²Yarnold, A.M. Girls' High S., Handsworth
Bennell, M. *e.* Crouch End High S., N.
Brassington, M.S. *s.e.d.*
4 Trinity Terrace, Cheltenham
Carroll, H. *a.* Convent F.C.J., Birkenhead
Crippin, L.E. *e.d.*
Endowed S., Ramsey, Hunts.
²Cuming, M.E. Private tuition
Franklin, D.I. Clapham Pk. High S., S.W.
Gabe, K. *s.d.* Bryn Holly, Newport
Gardner, D.N.M. *e.*
Lindisfarne, Trowbridge
Hamshaw, F. *s.g.*
Crossley & Porter Girls' S., Halifax
²Heath, L.K. Private tuition
Homeyer, C.A. *g.* Warwick H., Reade
Kyffin, A. *e.* Alderhurst, Sale
Ladbrook, I. *e.d.* Burstead H., Billericay
Mercer, C.I. *f.* The Mount, Banbury
Newbery, J. *e.g.*
Girls' High S., Handsworth
Porcher, E.A. *e.g.d.*
Gelliwastad. S., Pontypridd
²Riley, S.H. Milton Mount Coll., Gravesend
Sutton, E.C.L. *g.* Woodside, Hastings
Taylor, J. *a.* St. Andrew's Hall, Southport
Thomas, G.S. *d.* Maindee Lawn S., Newport
Thompson, V.C. *g.* Lyndale Coll., Worthing
Whitfield, B.A. *g.a.*
Ladies' Coll., Wellington, Salop
²Wood, W.R. High S. for Girls, Devonport
Wright, E.M. *e.*
Royal Masonic Inst. for Girls, S.W.
Alexandre, E.E. *e.a.f.*
St. James's Coll. S., Jersey
Anderson, M.I. *g.g.m.*
New Benwell Council S., Benwell-on-Tyne
²Avery, W.C. Ellerker Coll., Richmond
²Baker, E.M. High S. for Girls, Coventry
Batty, D.M. *a.*
Milton Mount Coll., Gravesend
Brentnall, M. *e.d.* Alderhurst, Sale
²Brock, E. Conv. of Notre Dame, Plymouth
Brown, H.M. Wakefield H., Thorpe Hamlet
Crummack, M. *d.* Wolvershill, Harrogate
²Elrick, M.M.
Inst. for Girls, Wilson St., Derby
Gregory, M.L. *s.d.* St. Helen's S., Streatham
Hinchcliffe, D. *h.* Westbourne H., Cowes
Kirkbride, V. *c.* Adelphi H., Salford
Knowles, A. *s.* Purcell H.; Scarborough
McDougald, M.C. *d.*
High S. for Girls, Coventry
Murray, E.M. Glenarm Coll., Ilford
Payne, M.E.E. *e.d.*
Clark's College High S., Tufnell Pk., N.
Swallow, H. Girls' Gram. S., Levenshulme
Townrow, M. *f.*
Old Grange S., Hampton-on-Thames
Williams, A. *g.* St. Maur Coll., Chepstow
Williams, F. Clanville H., Stoke Newington

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GIRLS, 3RD CLASS, PASS—*Continued.*

²Woolnough,D.K.
Cranley House S., Muswell Hill, N.
²Amos,G. High S., Stretford
Blackett,E.A. *e.* Chatwin H., Hurworth
Bond,E. *a.* Beechcroft Coll., Richmond
Boulton,C.W. *g.* Mowbray S., Sunderland
Chatfield,E.M. Bourne H., Eastbourne
Groves,B. *e.g.a.*
Battenhall Coll., Worcester
²Harris,E.M.
West Cornwall Coll., Penzance
Hemmings,A.M. *g.a.d.*
High H., Priors Marston
²Huxley,A.M.
Ladies' Coll., Wellington, Salop
Jackson,O. *d.*
St. Andrew's Hall, Southport
²Jones,J. Adelphi H., Salford
Le Cocq,S.B. *f.d.* Kibworth, Jersey
Lowe,E.O. *a.* London Coll., Stratford
Mitford,C. Clarence H., Filey
Mortimer,C.E. *e.f.* Dixfield S., Exeter
Rivett,H.M. *s.g.* Holt H., Fakenham
Rothney,D. *e.f.* 38 St. Peter's Rd., Croydon
Spratt,H.M. *e.g.* Larchmount Hall, Yatton
²Turner,L. Hindley Gram. S.
Baker,Z.E. *a.f.* Royal Bay H., Gorey
Beer,A.H. *g.d.* Girls' High S., Sudbury
Bradley,R. *d.* Adelphi H., Salford
Burton,L. Lonsdale H., Norwich
Dann,G.M. *a.* Clarendon S., Bath
Deslandes,J.G.
Clark's College High S., Tufnell Pk., N.
Dover,E.M. *e.*
Brickwood Lodge S., Tonbridge
²Dufty,A.L. Bank H., Crediton
Dunford,L.M.
Westbourne S., Westbourne Pk., W.
²Evans,A.E. Woodland H., Thirsk
Giles,R.M.
Camden S. for Girls, Kentish Town, N.W.
Grierson,M. *a.*
St. Andrew's Hall, Southport
Hill,M.A. *a.*
Cranley House S., Muswell Hill, N.
Hettinger,R. *ge.*
Windsor High S., Wavertree
Holderness,R. Glengarry, Birkdale
Hough,M. St. Andrew's Hall, Southport
Hume,C.E. *a.* Chatwin H., Hurworth
Hutchings,D.C. *e.* Howard Coll., Bedford
²Jones,W. Clanville H., Stoke Newington
Lee,D.M. *e.*
Penrith High S., Stamford Hill N.
Lee,J.M. *e.d.* Milton Mount Coll., Gravesend
Lyon,D.A. *e.d.*
Milbourne H., Clapton Sq., E.
Lyon,D.A.J.
Ivy House Coll. S., Crouch Hill, N.
Pointer,F.E. *s.g.d.* Clarendon H., Reigate
Rawsthorn,L.B. *e.* Harley H., Hereford
²Reakes,N.A. Vale View H., Devizes
²Smith,M.E.
Inst. for Girls, Wilson St., Derby
Southwell,D.A. West Ham High S.
Swan,E.M. Clifton H., Highgate, N.
Tarbet,A. *f.* Dixfield S., Exeter
²Thompson,F.
P.T. Classes, Mt. Pleasant, Liverpool
Walker,L.E. *e.d.* Calthorpe H., Banbury
Wardle,E. *d.* St. Andrew's Hall, Southport
Waycott,M. *e.a.* Collingwood, Paignton
Willis,P.G. *g.d.* High S., Barnes
²Winks,D.A. Alwyne Coll., Canonbury, N.
Baker,M.A. *e.* Royal Bay H., Gorey
Blight,G.M. *g.* St. George's H., Doncaster
Brough,D. *e.* High S. for Girls, Eastbourne
²Bryan,M. Adelphi H., Salford
²Cadman,M. Abbeyfield Mount S., Sheffield
²Chapman,E.M. Howard Coll., Bedford
Church,A.P. *a.*
Pemberton Coll., Upper Holloway, N.
Coaker,L. *f.* Grosvenor S., Wokingham
²Cooper,M.E.
Intermediate S., Clewer St. Stephen
Davies,M.J. *g.*
Springfield, Chorlton-cum-Hardy
Eglanton,D. *d.* Brean Down H., Burnham
Gillham,E.F. *e.g.d.*
Coll. S., Stanford-le-Hope
Gravett,J. Burgess Hill High S.
Howard,E.M.
Wordsworth Coll., Paddington
²Hughes,M.A.C.
The Laurels High S., Walsall
Ingram,E. St. Olave's, Taunton
²Jolliffe,E.L.F. Brean Down H., Burnham
Jolliffe,R.M. *e.d.* Westwing Coll., Ryde
Marshall,M.F. *g.* Burgess Hill High S.
Newcombe,L.L. Private tuition
²Palmer,W.C.
Liddon Memorial S., Kentish Town, N.W.
²Pickford,M. St. George's H., Doncaster
²Scott,B. Girls' S., Maryport
Simpson,L. *e.f.d.*
Camden S. for Girls, Kentish Town, N.W.
Stubbs,L. St. Andrew's Hall, Southport
²Toneri,A.M.
The Convent, The Avenue, Southampton
Warner,S.J. *g.f.* Private tuition
Adcock,W.K. *e.d.* Hatfield Coll. S.
²Armstrong,C. Adelphi H., Salford
Atkins,A.E. *g.a.d.* Beecholme Coll., Belper
Auston,L.G. Lambrook H., Wincanton
²Brothers,A.R.
Bedford Hill Coll., Balham, S.W.
²Brown,A.C. *d.* Brean Down H., Burnham
²Davey,V.E. Glenarm College, Ilford
Davies,M. Academy, Crewe
²Galvin,C.
P.T. Classes, Mt. Pleasant, L'pool
²Gelli,P.A. Loretto H., Highgate, N.
Gibbs,G.M. Babington H., Eltham
Gordon,D.I. *d.*
High Bank Ladies' S., Altrincham
Holmes,A.D. *a.*
Ladies' Coll., Wellington, Salop
Hooper,W.A.
Royal Masonic Inst. for Girls, S.W.
²Kingwell,D.F. Loretto H. Highgate
Mainprice,M.K. *e.f.* Babington H., Eltham
Mosley,C.E. *e.* South Villa S., Rotherham
²Neuberg,B.S. St. Helen's S., Streatham
Shank,H.D. *e.d.* Private tuition
Simpson,M.I. Hillside S., Clifton
Sizer,B.C *e.* Hartington H., Beckenham
²Small,N. Private tuition
Stanley-Smith,M.D. *e.*
Northcote H., Crouch Hill, N.
Suddaby,E.M. *g.d.* 14 Yorkersgate, Malton
Sutherland,M. *d.* Girtonville Coll., Aintree
Tatton,C. Milton Mount Coll., Gravesend
Townsend,D.M.
Clark's College High S., Tufnell Pk., N.
Wagstaff,R.E. *s.e.*
Drayton House Coll. S., Newport
Yeoman,A.E. *d.* Girls' Coll., Penmaenmawr
Avila,M.H. *d.* Coborn S. for Girls, Bow
Avison,N.L. *d.*
Crossley & Porter Girls' S., Halifax
Barnes,M.E.
Crossley & Porter Girls' S., Halifax
Binns,L. *d.*
Crossley & Porter Girls' S., Halifax
²Bond,A.
Intermediate S., Clewer St. Stephen
Caine,D. *e.*
Royal Masonic Inst. for Girls, S.W.
Cathcart,J.G.
Camden S. for Girls, Kentish Town, N.W.
Cole,H.M. Milton Mount Coll., Gravesend
Cook,M.M. *e.g.* Fernside, Grantham
Cullen,M.R. Wellington Coll., Hastings
Dicks,G. Stainsbridge Coll., Malmesbury
Glassey,M.A. Beecholme Coll., Belper
²Greene,E. Adelphi H., Salford
Harris,E.B. *e.d.* West Ham High S.
²Hartshorne,N. Glencoe, Erdington
Hayward,V.M. *e.a.*
Blofield H., Stony Stratford
Hollingshurst,B. Ellerker Coll., Richmond
Iles,M.D. *d.* The Collegiate S., Fairford
Jack,M.R. Alexandra Coll., Shirley
Maggs,M.E. Wellington Coll., Hastings
Mason,D.E. *e.g.*
Old Grange S., Hampton-on-Thames
²Mayne,M.J.
P.T. Classes, Mt. Pleasant, L'pool
²Norman,S.M. Vale View H., Devizes
Rees,N.M.
Royal Masonic Inst. for Girls, S.W.
Robertson,E.C.
Mountside High S., Hastings
Roe,B.M. *e.*
Camden S. for Girls, Kentish Town, N.W.
²Shread,A. Private tuition
Sparkes,C.E. Llanreath, Boscombe
²Tinsley,H.F. Belle Vue H., Holbeach
Tinson,G.F.
Camden S. for Girls, Kentish Town, N.W.
Waterman,N.E. *g.*
Queen Anne's Coll., Southend-on-Sea
Willson,L.
Westbourne S., Westbourne Pk., W.
²Appleton,E.M.
Greenhill Pk. Coll., Harlesden
Atherton,H. St. Andrew's Hall, Southport
²Bailey,B. Blagdon, Eastbourne
Baker,F.E.B. *e.* Weirfield S., Taunton
²Bamber,V.M.K.
Notting Hill High S., Norland Sq., W.
Baylis,E.V.E. *d.*
Camden S. for Girls, Kentish Town, N.W.
²Bishop,E. Brunswick H., Gravesend
Badden,B. *e.* The Elms, Redhill
Collins,A.L. *e.d.* Dresden H., Evesham
Gerrard,Z. *e.* Wm. Gibbs' S., Faversham
Green,A. High S. for Girls, Coventry
Hogg,A. *e.*
Grimshaw Street British S., Preston
Hurd,G.E. *d.* Infants' Board S., Chepstow
Jarvis,M.J.R. *g.*
Old Grange S., Hampton-on-Thames
Johnson,M.W. Lonsdale H., Norwich
Mansfield,M. High S., Syston
Mattingly,L. Girls' High S., Sudbury
Olliff,E.I.
West End High S., Newcastle-on-Tyne
²Parks,C.C. West Cornwall Coll., Penzance
Phillips,M. Gelliwastad S., Pontypridd
Pond,L.M. *d.* Emwell S., Warminster
Popplestone,G. Modern S., Torquay
Randall,A.M. *d.* Coll. S., Stanford-le-Hope
²Reynolds,I. Elm Lodge, Petersham
Snell,K. Priory Farm S., Earls Colne
Stewart,M.E.
Inst. for Girls, Wilson St., Derby
²Sykes,E.G.
11-12 Richmond Rd., Headingley
²Vickers,C. Middle Class S., Sheffield
²Weygang,E. Woking High S.
Wheway,F.G. *g.* Milton H., Atherstone
Arnold,M.N. *e.* Rose Bank, Brentwood
Bates,R.M. *e.* Essex H., Saltash
Bevis,A.M. *g.* Oakley High S., Southsea
Bruce-Payne,M.W. *e.* Ladies' Coll., Deal
Clark,D.M. Dagnall Park S., S. Norwood
²Collard,H.F.L.
Greencroft, Henley-on-Thames
Cook,C.A. *e.* Claremont Coll., Forest Gate
Cook,M.C. Alexandra Coll., Shirley
Corbett,W.B. Ellerker Coll., Richmond
²Crouch,P.G. High S. for Girls, Wanstead
Dann,D.M. Frenchay Lodge, nr. Bristol
Edwards,C.E. Ashleigh H., Tutbury
Eley,E.E. Fellenberg S., Maidstone
Elliott,D.J. Muswell Hill High S., N.
Finegold,M.
Clark's College High S., Tufnell Pk., N.
Gall,E.L.
Clark's College High S., Tufnell Pk., N.
Hale,H. St. Elmo's Coll., Totton
Hammond,G.E. Whitgift H., Croydon
Hawker,N. *d.* Mountside High S., Hastings
²Hobden,D. Howard Coll., Bedford
Holland,B.M. *g.* The College, Swanwick
Lewell,A. *e.*
Royal Masonic Inst. for Girls, S.W.
²Lidington,D.B. Clydesdale, East Finchley
Lloyd,D.E. *d.*
Stapleton Hall S., Stroud Green, N.
Malton,K.F. *g.* Hillside S., Clifton
Paterson,M. *g.d.*
St. Andrew's Hall, Southport
Piejus,G. *d.* Hill Croft, Hornsey, N.
²Randall,E.M. Emwell S., Warminster
Saddler,C. Cornwallis High S., Hastings
Sargent,B.F. *e.*
Royal Masonic Inst. for Girls, S.W.
Southon,A.M. *d.*
Bourne House, Eastbourne
²Thomas,L. Howard Coll., Bedford
Wellacott,B.A.S. *g.*
High School for Girls, Devonport
²Williams,E.E. Glenarm College, Ilford
Williams,G.
Priory H., Clapton Common, N.E.
Cawte,M.C. Alexandra Coll., Shirley
Clarke,E.M. *g.d.*
St. Monica's Girls' S., Herne Bay
Cowan,I.M. Oakley High S., Southsea
Foxcroft,D.J.
Ivy House Coll. S., Crouch Hill, N.
Halfpenny,M.A.
Regent St. Higher Grade S., Plymouth
Knight,K. *d.* Wilber H., Biggleswade
Lees,A. St. Andrew's Hall, Southport
Marks,M. *e.g.* Gloucester House S., Kew
²McGann,C. Adelphi H., Salford
Meyer,M.A. *e.* Tinwald H., Heswall
²Orr Ewing,E.W. Private tuition
²Pepper,A.M.S.
Lynsted Coll. S., Green St., Sittingbourne
Perry,M.E. The Collegiate S., Fairford
Plume,J. *g.d.* Ladies' Coll., Margate
Rimmer,M. *a.*
St. Andrew's Hall, Southport
²Robertson,E.
Milton Mount Coll., Gravesend
²Rowntree,L.D.
Richmond Coll., Barnsbury, N.
Snell,E. St. Maur Coll., Chepstow
Tuson,K. Lowther Coll., Lytham
Webb,D.M. *e.g.* Oakover Girls S., Burnham
Weldon,E.M. Muswell Hill High S., N.
Bance,N. *s.g.* Hope Lodge S., Bexley Heath
Barrington,S.J. Weirfield S., Taunton
Beale,L.E.A. *e.* Alexandra Coll., Hastings
Boast,K.E. *d.* Highfield S., Croydon
Ffould,D. Thortonville S., Thornton Heath
Foster,M. *f.* Hill Croft, Hornsey, N.
Gardiner,S.K. *e.d.*
Camden S. for Girls, Kentish Town, N.W.
Hall,G.M.R. *g.* 14 Yorkersgate, Malton
²Hellewell,G.
11-12 Richmond Rd., Headingley
Horsfall,D. Springfield S., Stockport
McNicoll,D. *d.*
Crossley & Porter Girls' S., Halifax
Pfeil,E.M. *d.* Clough S., Reigate
Stancliffe,D.G. *g.*
Stapleton Hall S., Stroud Green, N.
Walker,W. St. Andrew's Hall, Southport
²Wiltshire,M. Alexandra Coll., Shirley
Woodcock,N. *a.* Manor H., Driffield
Woodman,I.A. *g.* Oakover Girls S., Burnham
²Anderson,J.M. Private tuition
Aremia,N. *e.d.* Adelphi H., Salford
Bentinck,E. St. Andrew's Hall, Southport
²Browne,M.G. Private tuition
Couper,C.B. South Croydon Coll.
Crook,G. St. Andrew's Hall, Southport
Dougall,H.R. Claremont High S.
Francis,J. Stainsbridge Coll., Malmesbury
Gray,B. *d.* St. Mary's Convent, York
Harper,D.A. *a.* Ellerker Coll., Richmond
Isherwood,E.B. *d.* Norma S., Waterloo
Leghorn,P.A. *e.d.* Norma S., Waterloo
Longster,H.M. *e.g.* 14 Yorkersgate, Malton
Loveridge,C.M. Kensington H., Chiswick
²Neylan,M. Adelphi H., Salford
Nott,M.V. Girls' High S., Sudbury
Parker,O.L. The College, Southend-on-Sea
Pritchard,K. Cornwallis High S., Hastings
Robertson,J. *e.* Glenarm Coll., Ilford
Rosser,E. *g.* St. Maur Coll., Chepstow
Speller,E.L. *e.d.* Coborn S. for Girls, Bow
Stephens,D.A. Bank House, Ledbury
Sumner,E. High S. for Girls, Devonport
²Taylor,E.C. Crescent Coll., York
²Thomas,Mary
Summerfield Hall, Macsycwmmer
²Thomson,K.B. Grosvenor H., Highgate
Todd,C.L. Inst. for Girls, Wilson St., Derby
Turley,A. *e.a.d.* Adelphi H., Salford
Woodward,F. *e.g.* Girtonville Coll., Aintree
Worrall,M.A. Hill Croft, Bentham
²Baker,F.M. Private tuition
Bolton,D. *d.* St. Andrew's Hall, Southport
Christopher,M. *d.* Glenarm Coll., Ilford
Coombe,L. Dixfield S., Exeter
²Conlon,A.
Pupil-Teachers' Coll., Everton Valley
Dowle,L.L. *d.* Girls' Board S., Chepstow
Eaton,F.M. *g.*
Ladies' Coll., Wellington, Salop
Evans,M.F. *a.* High S. for Girls, Coventry
Farnell,F. St. Andrew's Hall, Southport
Fielden,B.M.
Royal Masonic Inst. for Girls, S.W.
Galloway,G. *e.d.* Girtonville Coll., Aintree
Hobson,N.K. Highfield S., Croydon
Joseph,H. *e.*
Royal Masonic Inst. for Girls, S.W.
²King,E.F.M. Haringey Park School, N.
Lawrence,M. Llanreath, Boscombe
Lemon,I.A. *e.* Castle Hill S., Maidenhead
Lofts,B.S. *d.* Guelph H., Margate
Marston,E.H.V.
Wakefield H., Thorpe Hamlet
Owen,G. Woking High S.
Pither,G.K. Milton Mount Coll., Gravesend
Russell,H.E. *e.g.* High H., Priors Marston
Sansom,N. Beechcroft Coll., Richmond
Scott,F.M. *e.a.*
High Bank Ladies' S., Altrincham
Smith,J.
Delaval Council S., Benwell-on-Tyne
²Smith,M.C.I. Emwell S., Warminster
Stacy,E.G. *e.d.* The Limes, Buckhurst Hill
Talbot,G.V. St. Maur Coll., Chepstow
Waddell,L.M. *d.* Babington H., Eltham
Watts,M.F. Ellerker Coll., Richmond
Westaway,W. *s.* Home Park S., Stoke
²Bett,M.McL. Twickenham College
Borebank,C.M. *s.*
Somerville H., Northampton
²Brown,E.G.
Milton Mount Coll., Gravesend
²Bullock,E.A. Hemdean H., Caversham
Childs,G. St. Elmo's Coll., Totton
Clinch,M.
Lynsted Coll. S., Green St., Sittingbourne
Cobb,E.M. *g.* Milton H., Atherstone
²Cowling,M.L. Ellerker Coll., Richmond
Cox,L.A. Lambrook H., Wincanton
Gatley,L.M. *e.* Lyndale Coll., Worthing
²Greenwood,E.
The Convent, The Avenue, Southampton
Guthrie,E. Ellerker Coll., Richmond
Gwyther,A.G. Milton Lodge, Fleetwood
²Hay,A.W.
Westbourne S., Westbourne Pk., W.
²Jenkins,E.R.
Intermediate S., Clewer St. Stephen
Johnson,P.
Cleveland H., Lower Clapton, N.E.
²Keene,I.P. Private tuition
²Kingdom,M.G. St. Kilda's Coll., Bristol
²McKechnie,J.A.
Brooklyn High S., Leytonstone
²O'Donnell,A. Adelphi H., Salford
²Orme,M.A. Ashleigh H., Tutbury
Renny,I.A.
Field House Coll., Heaton Chapel
Rigbye,M.M.K. *g.*
Brean Down H., Burnham
Vigers,P.M. *d.* Clough S., Reigate
Wilson,E.E.
Harringay Park S., Hornsey, N.
²Woodward,M. High S., Stechford
Adair,D. Friends' S., Wigton
Allen,D.N. Pembroke Coll., Harrogate
²Clarke,A.M.
Glendale H., Westcliff-on-Sea
Croll,M.E. *e.* Lancelyn H., Kew Gardens
Denison,G.E.
Royal Masonic Inst. for Girls, S.W.
Elliott,G. *g.*
Felix High S., Wandsworth Common, S.W.
²Gemmel,N.A. Private tuition
²Harris,A.M. St. Maur Coll., Chepstow
Healey,E. *e.*
Royal Masonic Inst. for Girls, S.W.
Hyslop,J.M. *s.g.* Harley H., Hereford
Jacobs,J.C. *s.*
Royal Masonic Inst. for Girls, S.W.
Jones,L. *g.* Milton Mount Coll., Gravesend
Kidson,F.M. *g.d.*
Ladies' Coll., Wellington, Salop
King,E.L. *d.* Glenarm Coll., Ilford
²Mount,C.D. Private tuition
Pamflett,L.K.
St. Monica's Girls' S., Herne Bay
Peachey,E. Chingford High S.

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GIRLS, 3RD CLASS, PASS—*Continued.*

Roberts, D. H. G. *e.* Clarendon S., Bath
Roebuck, D. *d.* Pembroke Coll., Harrogate
Sherburne, E. I. G. *d.* Ingersley H., Birkdale
[2]Sleeman, E. Fordeleigh Coll., Newton Abbot
[2]Trabattoni, T.
Conv. of Notre Dame, Plymouth
Trotter, E. *e.* Fernside, Grantham
Wadham, R. *a.* Westbourne H., Cowes
Bays, H. Girls' High S., Sudbury
Betts, R. W. *d.* Gavine H., Portsmouth
Bracher, F. H. *e.d.*
Camden S. for Girls, Kentish Town, N.W.
Bridgland, E.
Dagnall Park S., South Norwood
Clayton, M. St. Andrew's Hall, Southport
[2]Enright, B.
Conv. of Notre Dame, Plymouth
Foster, F. A. Coborn S. for Girls, Bow
Fraser, K. S. St. Bernard's S., Newton Abbot
Gray, M. Ashbourne H., Reading
Guillemot, E. A. M. *e.f.*
St. Andrew's Conv., Jersey
Hart, C. *e.* Tivoli H., Gravesend
[2]Hobbs, L. Sittingbourne College
McClory, A. Convent F.C.J., Birkenhead
[2]Norris, M. E. Adelphi H., Salford
[2]O Rourke E. Adelphi H., Salford
Reakes, H. M. Vale View H., Devizes
Richards, G. Lambrook H., Wincanton
Rutherford, M. F. Friends' S., Wigton
Sinnock, M. M. *s.d.* Burgess Hill High S.
Smith, M. I. Mayfield Coll., Marlborough
Smith, M. L. Girls' High S., Sudbury
Swaine, M. *g.d.*
Crossley & Porter Girls' S., Halifax
Thomas, E. *g.* St. Maur Coll., Chepstow
Walsh, K. E. Ladies' Coll., Margate
[2]Aremia, A. Adelphi H., Salford
Arnold, R. S. *e.*
Bishop Fox's High S., Taunton
[2]Bowes, A. H. 4 Douro Terrace, Sunderland
Bull, M. K. Lancefield S., Southend-on-Sea
Cashman, E. G. Sittingbourne College
Cocks, L. L. Modena H., West Ealing
Davies, E. M. Crescent Coll., York
Denison, E. G.
Field House Coll., Heaton Chapel
Galaher, G. F. Westwing Coll., Ryde
[2]Harris, M. M. Emwell S., Warminster
[2]Hickey, B. Private tuition
Lees, A. Springfield S., Stockport
Mitchell, G. I. Hemdean H., Caversham
Pollard, F. Chingford High S.
[2]Skinner, M. Private tuition
[2]Stanton, R. M. Girtonville Coll., Aintree
Wheeler, D.
Queen Anne's Coll., Southend-on-Sea
Williams, C. T.
Milton Mount Coll., Gravesend
[2]Adcock, G. Welby Coll., Market Deeping
Blanchard, K. M. Alexandra Coll., Shirley
[2]Brockis, K. Milton Mount Coll., Gravesend
[2]Corpe, F. E. Malvern H., Reading
Doyle, N. St. Mary's Convent, York
[2]Etheredge, D. B. Private tuition
Fisher, E. Beecheroft Coll., Richmond
Fletcher, M. Western H., Nottingham
[2]Hamshar, H. B. Oxford H., Leatherhead
Herring, M. E. Y Garn, Bromley
Hibberd, H. K. Selwood S., Frome
[2]Holmes, A. C. Wakefield H., Thorpe Hamlet
[2]James, L. E. Private tuition
Lacey, M. V. Salisbury H., Plymouth
Nathan, I. G. *ge.* Elgin Coll., Maida Vale, W.
Patterson, E. A.
Bede Terrace S., Barnard Castle
Peck, L. Penpol Girls' S., Hayle
Robertson, R. D. Milton Lodge, Fleetwood
Rowe, N. J. H. *e.g.*
Royal Masonic Inst. for Girls, S.W.
Shury, A. V. *d.* Highfield S., Croydon
Stevens, H. A. *s.*
Drayton House Coll. S., Newport
Thornton, C. Park S., Southwell
[2]Walker, E. Friends' S., Wigton
[2]Wilson, B. B. Lyndale Coll., Worthing
Windridge, G. I. M. *s.e.a.*
Hope Lodge S., Bexley Heath
Wood, E. *d.* Penketh S., nr. Warrington
Boys, L. A. B. St. Winifred's, Clifton
[2]Brooke, F. Adelphi H., Salford
[2]Campbell, C.
P.T. Classes, Mt. Pleasant, L'pool
Clark, E. M. Girtonville Coll., Aintree
Clements, G. M. Stanley House S., Newport
Cliff, E. Convent F.C.J., Birkenhead
Corner, I. Friends' S., Great Ayton
[2]Crabtree, M. A. 309 Park Road, Oldham
Coulles, S. R.
Regent St. Hr. Grade S., Plymouth
[2]Edkins, F. D. Private tuition
[2]Forrest, G. 4 Douro Terrace, Sunderland
Foster, H. M. H.
Brooklyn High S., Leytonstone
[2]Galvin, M.
P.T. Classes, Mt. Pleasant, L'pool
Hart, I. V. J Minerva Coll., Dover
Jones, U. M. D. Girls' Coll., Penmaenmawr
King, M. Clarence H., Filey
Leitch, M. E. Gloucester House S., Kew
[2]Lusted, B. Girls' High S., Chard
McCubbing, M. *e.* Friends' S., Great Ayton
Phillips, G. E.
10-12 Reginald Terrace, Leeds
Richards, E. L. *g.*
Ladies' Coll., Wellington, Salop
[2]Roome, E. M. Upper Mount, Southsea
Stevens, E. S. Lynton H., Portsmouth
Wood, E. E. Guelph Coll., Bristol
[2]Bailey, E.
Pupil-Teachers' Coll., Everton Valley
Braithwaite, N. Chingford High S.
[2]Colt, H. E. Upper Mount, Southsea
Day, G. W. *d.* Iselden S., Boscombe
Eastham, I. K.
Clark's Coll. & High S., Tufnell Pk., N.
Elston, W. Bank H., Crediton
Garton, F. M. *g.* Clarendon H., Reigate
[2]Hammond, E. St. Winifred's, Southampton
[2]Johnson, E. A. London Coll., Stratford
Lang, E. A. *e.g.* Cambridge H., Millbrook
Lusted, E. L. Girls' High S., Chard
McAuliffe, A. *d.* Adelphi H., Salford
Morris, F. *e.* St. Andrew's Hall, Southport
Nicholls, M. G. Hill Croft, Hornsey, N.
Oldendorff, M. T. L. *d.*
Alresford S., Chislehurst
Pronton, B. S. The College, Swanwick
Shorter, K. Wellington Coll., Hastings
Smith, D. I. *d.*
High S., Woodville, Gravesend
Stacy, V. W. Stamford Hill & Clapton High S.
Tilley, D. Clough S., Reigate
Townend, D. *g.d.* St. George's H., Doncaster
Wagstaff, V. M. *d.*
Drayton House Coll. S., Newport
Williamson, M. W. Nelson S., Headingley
Ackroyd, M. *d.* Collegiate S., Doncaster
Basford, H. M.
Inst. for Girls, Wilson St., Derby
Bates, J. A. Beecholme Coll., Belper
Chilton, L. B. Westwing Coll., Ryde
Diller, A.
St. Peter's Coll. S., Fulham Rd., S.W.
Harper, D. M.
Cranley House S., Muswell Hill, N.
Jolliffe, R. R. *e.g.* Private tuition
[2]Jones, A. E. Milton Mount Coll., Gravesend
Maconachie, L. M.
Chudleigh H., W. Hampstead, N.W.
Middle, G. F. Guelph Coll., Bristol
[2]Miles, H. M.
Milton Mount Coll., Gravesend
[2]Phillips, L. E. Boughrood H., Brecon
Rawles, W. E.
Beauclerc S., Sunbury-on-Thames
Rumbold, P. Athelstan H., Cliftonville
[2]Slaney, C. Private tuition
Sutherland, F. M.
South Norwood High S., S.E.
[2]Wallis, D. M.
Keble Memorial Girls' S., Harlesden
Wareing, L. St. Andrews' Hall, Southport
Willis, E. Wandsworth H., Heaton
Wood, D. Pembroke Coll., Harrogate
Avent, K. Bristol Girls' High S.
Beare, N. Fordeleigh Coll., Newton Abbot
Campbell, G. M.
W. Central Coll. S., Mecklenburgh Sq., W.C.
[2]Conway, M. M. Oxford H., Leatherhead
[2]Cosford, B. J. Clare H., Northampton
[2]Fontaine, A. Pencraig Coll., Newport
[2]Foote, F. V.
Freemantle High S., Southampton
Fox, E. A. Milton H., Atherstone
Fox, M. J. *d.* High S. for Girls, Staines
Gibsone, J. L. *e.*
Royal Masonic Inst. for Girls, S.W.
Goulden, C. M. Rose Bank, Brentwood
Hirst, B. St. Andrew's Hall, Southport
[2]Howlett, K. E.
Wakefield H., Thorpe Hamlet
Jeoffroy, M. S.
Wordsworth Coll., Paddington
[2]Jordan, M. E. The Tutorial S., Penarth
Loggie, G. Glencoe, Erdington
[2]McLoughlin, M. A.
Pupil-Teachers' Coll., Everton Valley
[2]Mount, P. M. Private tuition
[2]Rogers, M. Conv. of Notre Dame, Plymouth
[2]Smith, D. T.
Milton Mount Coll., Gravesend
Strachan, S. M. Fellenberg S., Maidstone
Walker, A. A. St. George's H., Doncaster
Wiseman, I. Wakefield H., Thorpe Hamlet
Young, G. E. *d.*
Priory H., Clapton Common, N.E.
[2]Adye, G. Stainsbridge Coll., Malmesbury
Barker, R. S. Friends' S., Saffron Walden
Bartlett, M. Wm. Gibbs' S., Faversham
Boyle, G. Home Park S., Stoke
Burman, D. A.
Portland Crescent S., Manchester
Butler, E. M. *e.* Wilton H., Reading
Clack, W. L. *e.* The Mount, Banbury
Cox, H. A. *d.* Lambrook H., Wincanton
Dennis, B. J. Durham H., Eastbourne
Egbeare, G. M.
Salisbury Road S., Plymouth
Fraser, P. A. Ashbourne H., Reading
Gardiner, F. B. *g.*
Girls' Central S., Taunton
Greenland, B. M. Mamdee Lawn S., Newport
Hawkes, D. *e.* Woking High S.
[2]Jowett, M. W. Girls' Collegiate S., Morley
Kaplan, T. *d.* Tivoli H., Gravesend
McAllister, S. E. *e.* St. Paul's S., Wigan
[2]McDonald, E.
P. T. Classes, Mt. Pleasant, L'pool
Nelson, F. D. 114 Cathedral Rd., Cardiff
Nobbs, E. A. Alwyne Coll., Canonbury, N.
Price, M. Milton Mount Coll., Gravesend
Rennie, I. L. *g.* Clarendon H., Reigate
Scherf, F. W. *d.*
Camden S. for Girls, Kentish Town, N.W.
Simmons, W. Linley H., Worthing
[2]Swenson, M.
Summerfield Hall, Maesycwmmer
Thomson, L. M.
Cranley House S., Muswell Hill, N.
Tyler, E. F. Friends' S., Saffron Walden
Wheeler, E. Hilton Lodge, Brighton
Wood, M. G.
Crossley & Porter Girls' S., Halifax
Wyld, I. M. Lancelyn H., Kew Gardens
Clarke, M. P.
St. Monica's Girls' S., Herne Bay
Cohen, I. Crofton House S., Manchester
Dowler, H. M. *d.*
Girls' High S., Handsworth
[2]Evans, A.
Summerfield Hall, Maesycwmmer
Farrant, K. Stainsbridge Coll., Malmesbury
Johnson, N. Fellenberg S., Maidstone
Owen, D. I. Milton Mount Coll., Gravesend
Picken, M. D. *d.*
11 Agamemnon Rd., W. Hampstead, N.W.
Samuels, G. Girls' Coll., Penmaenmawr
[2]Seward, D. G. Malvern H., Reading
Smith, L. Castle Dean S., Newport, I.W.
Watson, E. Abbey H., Selby
Wells, S.
Priory H., Clapton Common, N.E.
Wood, L. Girtonville Coll., Aintree
Ash, M. H. *g.* Haslemere, Clapham Pk., S.W.
Baldwin, K.
Stainsbridge Coll., Malmesbury
Broadway, F. P. Summerbrook, Reading
Davies, G. M.
Summerfield Hall, Maesycwmmer
[2]Nagle, E. A. Notre Dame Conv. S., Woolwich
Pilling, H. St. Andrew's Hall, Southport
[2]Roberts, F. M.
Inst. for Girls, Wilson St., Derby
Shaw, H. S.
Westcliff High S., Poulton-le-Fylde
Smith, B. I. Wordsworth Coll., Paddington
Smith, E. M. Mayfield Coll., Marlborough
Stansfield, E.
Felix High S., Wandsworth Common, S.W.
Taylor, B. Oakley High School, Southsea
Taylor, W.
Franciscan Conv., Clacton-on-Sea
Allen, D. M. High S. for Girls, Staines
Antill, G. M. Maindee Lawn S., Newport
Bailey, B. A. *d.* St. George's H., Doncaster
Davies, D. L. London Coll., Stratford
Gibbs, M.
Queen Anne's Coll., Southend-on-Sea
Greentree, A. L. St. Mary's Convent, York
Haberlin, E. *g.* Conv. of Loreto, Hulme
Hammond, G. St. Andrew's Hall, Southport
[2]Hawkins, M. G.
Cairnbrook Coll., S. Woodford
Hutton, H. M. St. Vincent S., Barnstaple
Jeffreys, M. L. Pencraig Coll., Newport
Newman, C. E. 51 Ditchling Rise, Brighton
Robinson, L. M. *a.*
Athelstan H., Cliftonville
Sarjeant, E. C. Girls' High S., Bridgnorth
[2]Slater, M. M. A. Senlac S., Paignton
[2]Turner, E. L.
Battersea Polytechnic Science S., S.W.
Walker, L. Collegiate S., Muswell Hill, N.
Williams, D. G. Lulworth H., Caerleon
Williams, E. H. Friends' S., Wigton
Buck, D. G. Emwell S., Warminster
Case, W. M. Mecklenburg H., Putney Hill
Garstin, A. B.
Royal Masonic Inst. for Girls, S.W.
Heslop, J. Gracehill H., Crook
Lund, N. E. Summerbrook, Reading
Pearce, E.
Drayton House Coll. S., Newport
Prewer, M.
Milbourne H., Clapton Sq., N.E.
Renshaw, B. H. *g.*
Felix High S., Wandsworth Common, S.W.
Richardson, I. A. St. Mary's Convent, York
[2]Saunders, M. A. Twickenham College
[2]Smith, G. A. Private tuition
Stapleton, E. B.
Greenhill Pk. Coll., Harlesden
Taylor, I. E. Crescent Coll., York
Wainwright, E. A.
South Norwood H.S., S.E.
Wells, D. Lilford Coll., Scarborough
Wheeler, F. M. High S. for Girls, Frome
[2]Dewhurst, M.
Grimshaw Street British S., Preston
Gaulter, H. *e.g.* Highfield Coll., Blackpool
[2]Gunstone, H. Middle Class S., Sheffield
Hutchings, E. Selwood S., Frome
Jeff, E. Milton H., Sunderland
Kent, L. A. Chestnut House, Lincoln
Leader, J. Stainsbridge Coll., Malmesbury
Milstead, C. E. *d.* Y Garn, Bromley
Moss, I. St. Andrew's Hall, Southport
Palfreeman, M. Crescent Coll., York
Pittaway, B.
High S., Langley, nr. Birmingham
[2]Pook, E. M.
St. Andrew's Roman Catholic S., St. Heliers
[2]Rawkins, E. St. Andrew's Hall, Southport
Thomson, P. M. F.
Steyne High S., Worthing
Butler, G. M. *d.* Wm. Gibbs' S., Faversham
[2]Crabb, E. C. Orchardleigh, Ryde
Crocker, J. P.
Lansdowne Coll., Notting Hill, W.
Gulston, E. M. *d.* Sittingbourne College
Humphry, F. E. Isleden S., Boscombe
Kibble, K. M. Calthorpe H., Banbury
Mason, L. M. Maindee Lawn S., Newport
Poulter, M. Girls' High S., Bridgnorth
Rowe, M. A. Fair Bank S., Fulwood
Thomas, M.
Summerfield Hall, Maesycwmmer
[2]Bevan, R. K.
Castle Hill Day S., Maidenhead
Burgess, L. E.
Bishop Fox's High S., Taunton
Eveillard, V. G. *f.*
St. Andrew's Conv., Jersey
Horn, D. M. *d.* Ladies' Coll., Margate
Martin, A. M. Private tuition
Middleton, M. *e.*
Highfield Coll., Blackpool
[2]Sullivan, A. M. National S., Ruan Minor
Van Nierop, F. Tivoli H., Gravesend.
Archer, D. C. Guildford Lodge S., Lee
[2]Fitz-Henry, D. J. St. John's Coll., Brixton
Huckett, F. E. Private tuition
Matthews, W. N.
Dunnington, Muswell Hill, N.
McIntyre, N. Alresford S., Chislehurst
Rhodes, M. E. Chestnut House, Lincoln
Sutton, A. St. Andrew's Hall, Southport
Woodman, M.
Stainsbridge Coll., Malmesbury
Bemi, M. W.
Penrith High S., Stamford Hill, N.
Carr, E. M. High S. for Girls, Rochdale
Cleverdon, B. K.
Houndiscombe S., Plymouth
Dolton, M. M. Rockvale H., Brixham
[2]Harris, D. H. Clifton H., Leyton
Harrison, M. H. 114 Cathedral Rd., Cardiff
Inman-Moore, C.
Salisbury Coll., Wavertree
Jack, J. R. Alexandra Coll., Shirley
Kebbell, E. A.
Clark's College High S., Tufnell Pk., N.
Mordle, M. L. Wood Green Comm. S., N.
Morgan, E. Crescent S., Selby
Peromi, D. A. Clovelly, Cliftonville
Abrahamson, H. Ystrad H., Newport
Arnold, E. Highfield Coll., Blackpool
Barnes, E. Ystrad H., Newport
Dove, D. *d.*
Queen Anne's Coll., Southend-on-Sea
Giblett, M. Weirfield S., Taunton
Hicklin, W. *d.* St. Editha's S., Tamworth
Poppleton, M. Chestnut House, Lincoln
Walker, D. M. Pembroke Coll., Harrogate
Walwin, S. B. Emwell S., Warminster
[2]Bowhill, D. M.
Wakefield H., Thorpe Hamlet
Curtis, M. J. *g.* St. Vincent S., Barnstaple
Cuthbert, O. Friends' S., Great Ayton
Dickinson, N.
St. Andrew's Hall, Southport
[2]Glisbey, N. Castle Hill S., Maidenhead
Kington, G. E. *d.* Malvern H., Reading
[2]Mathers, F. H.
11-12 Richmond Rd., Headingley
Parker, C. M.
Springfield, Chorlton-cum-Hardy
[2]Phillips, J.
Summerfield Hall, Maesycwmmer
Walter, G. M. Mayfield Coll., Marlborough
Warner, I. G. Whitgift H., Croydon
Watts, W. A. E. S.
Royal Masonic Inst. for Girls, S.W.
Williamson, B. Friends' S., Wigton
Bath, E. E. Rockvale H., Brixham
Bird, A. H. Oban H., Cowes
Broughton, L. *g.* Salisbury Coll., Wavertree
Hall, M. Friends' S., Great Ayton
Hyde, E. Girls' High S., Chard
[2]Lillie, M. L.
11-12 Richmond Rd., Headingley
Moore, N. B. Harley H., Hereford
Sexton, F. M. Oban H., Cowes
Skynner, E. F. P. Senlac S., Paignton
Starck, L. *f.* St. James's Coll. S., Jersey
Street, E. E. Llanreath, Boscombe
Ward, E. B. Babington H., Eltham
Weekes, C. L. Dresden H., Evesham
Barrett, E. C. Selwood S., Frome
Beveridge, C. M. Crescent Coll., York
Cooper, M. L. D.
Milton Mount Coll., Gravesend
Crowe, A. V. Brynderwyn Coll., Wrexham
Griffin, A. 51 Ditchling Rise, Brighton
[2]Heald, M. Middle Class S., Sheffield
[2]Loke, G. *d.* St. Ursula's Convent, Dover
Newbury, G. Girls' Central S., Taunton
Nield-Siddall, O. Churton Villa, Rhyl
Smith, D. B Norma S., Waterloo
Smith, K. M. Manor H., Driffield
Wood, M. *g.* Salisbury Coll., Wavertree
Dines, V. 4 Stockwell Rd., S.W.

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GIRLS, 3RD CLASS, PASS—*Continued.*

Hartnoll, G.M. Crouch End High S., N.
[2]Lawler, M. Our Lady's, Eldon St., Liverpool
Major, M.F.H. Vale View H., Devizes
Powell, A.E. Harley H., Hereford
Schofield, K. High S., Prestwick
Taylor, W.A. Belmont S., West Green, N.

Botley, B. French Prot. S., Shaftesbury Ave., W.C.
[2]Cowper, H.M. Richmond Coll., Barnsbury, N.
Hayman, E. Drayton House Coll. S., Newport
Head, M. Collegiate S., Brentford
Simpson, D.M.*f.* Hillside S., Clifton
Williams, M. Western H., Nottingham
Wilson, E.C. Brean Down H., Burnham

Daly, A. Castle Dean S., Newport, I.W.
Hunter, S.M.D. Clough S', Reigate
Livingston, V.R. High S., Attleborough
[2]Pollard, M.C. High School, Woodville, Gravesend
[2]White, L.M. Malvern H., Reading
[2]Dalton, E.D. Milton Mount Coll., Gravesend
Haine, H.M. North Road S., Plymouth
Hudson, G. Royal Masonic Inst. for Girls, S.W.
Laplain, L. French Prot. S., Shaftesbury Ave., W.C.
McMaster, J.C.H. Brook Green College, W.
[2]Pattinson, F.E. Grosvenor H., Highgate
Saunders, E.M. High S., Attleborough
Springfield H. Frankfort S., Forest Hill

[2]Fletcher, J. Convent F.C.J., Birkenhead
[2]Parks, I.D. Twickenham Coll. S.
Walters, C. Lulworth H., Caerleon
Wright, W.J. Coll. S., Stanford-le-Hope
Ash, L.C. Vale View, Devizes
Evans, G. Private tuition
Hardy, N.E. City of Durham S. for Girls, Durham
Ormesher, A. Penketh S., nr. Warrington
Philipps, M.A. Milton Mount Coll., Gravesend
Clarke, D. High S., Attleborough
[2]McDonnell, M. P. T. Classes, Mt. Pleasant, L'pool

LOWER FORMS EXAMINATION.—PASS LIST, CHRISTMAS, 1903.

BOYS.

Abrahams, L.G. Percy H., Finchley Rd., N.W.
Abrahams, V.E E.G. Percy H., Finchley Road, N.W.
Adams, G.R. Wilsford H., Devizes
Adams, H. Commercial Coll., Acton
Adams, S.N. Eton H., Southend-on-Sea
Afif, D. Great Ealing S., Ealing
Allan, A. Salway Coll., Leytonstone
Allen, G.J.W. Oxenford H., St. Lawrence, Jersey
Ames, H.E. Belle Vue H., Norwich
Anderson, A.J. Malden Coll., Surrey
Anderson, C. Addington Sq. S., Margate
Anderson, R. The Coll., Weston-s.-Mare
Arbuthnott, D. Senlac S., Paignton
Archdale, F. Cliftonville Coll., Margate
Archdale, J. Cliftonville Coll., Margate
Archer, B.H. Christ Church Higher Grade S., Southport
Armiger, W.J.G. Elmhurst S., Kingston-on-Thames
Armitage, W.H. Christ Church Higher Grade S., Southport
Arnaud, A.L. Pierremont Coll., Broadstairs
Arnold, W.W. Salway Coll., Leytonstone
Arthur, F. Wadham S., Liskeard
Arthur, P. Wadham S., Liskeard
Ascott, J.V.D. High S., Devonport
Atherton, J. Modern S., Southport
Aubrey, R.F. Ivel Bury S., Biggleswade
Audagna, E. Deal College
Austin, E.E. Christ Church Higher Grade S., Southport
Austin, R.J. Raleigh Coll., Brixton
Axtens, C.R. 14 Royal York Crescent, Clifton
Azenstein, S. Tivoli H., Gravesend
Baily, R.G. Wellington Rd. S., Taunton
Baker, B.H. Marlborough Coll., Tue Brook, Liverpool
Baker, G.S. The College, Tankerton-on-Sea
Baker, H.T. The High S., Blackpool
Balleine, C.A. St. Mary's Coll. S., Jersey
Ball, H.T. Borden Gram. S.
Bance, R.A. Highbury Park S., N.
Barber, G.C. Roseberry H., Scarborough
Barber, J.B. Roseberry H., Scarborough
Barnard, J. High S., Brentwood
Barnes, W.T. Kilgrimol S., S. Anne's-on-Sea
Barnett, M. Jewish Coll., Margate
Barnett, V. Jewish Coll., Margate
Barrett, R.E. Kilgrimol S., St. Anne's-on-Sea
Barrington, W. Wellington Road S., Taunton
Bartlett, A.F. Colebrook H., Bognor
Bassett, L. Deal College
Bateman, A.H. Crafnant S., Buckhurst Hill
Bateman, L. Farnworth Gram. S.
Bateman, R.J. Gram. S., Cowes
Bayley, J.H. Victoria Coll., Congleton
Beach, A.W. Chandos Gram. S., Winchcombe
Beach, F. Chandos Gram. S., Winchcombe
Beadle, H.G. Handel Coll., Southampton
Beales, T.B. Barton S., Wisbech
Bedford, C.T. Seaford College
Bedwell, L.S. Saham Coll., Watton
Bellars, G.E. Barton S., Wisbech
Benham, R. Chandos Gram. S., Winchcombe
Bennett, W. Northgate S., Winchester
Benzimra, F. Townley Castle S., Ramsgate
Bersey, A.O.C. Malden Coll., Surrey
Bettesworth, T. Malden Coll., Surrey
Bickerstaff, R. Girtonville Coll., Aintree
Billot, J. Jersey Modern S.
Bion, R.E. Taunton School
Bird, S.W. Catford Coll. S., Lewisham
Birdseye, S. Ivel Bury S., Biggleswade
Birtwistle, T.A. Christ Church Higher Grade S., Southport
Bishop, J.E. Taunton School
Bishop, J.S. Grammar S., Cowes
Blaber, H.W. St. Austell College
Blacow, W. Gram. S., Blackpool
Blakeway, E.W. Westbourne High S., Paddington
Blanchflower, S.G. Duncan H., Gt. Yarmouth
Blaxall, F.H. Haringey Park S., N.
Blaxall, M.L. Haringey Park S., N.
Blight, G.E. The Tutorial S., Penarth
Block, A. Tivoli H., Gravesend
Bloomer, H.S. The Commercial S., Stretford
Bloomfield, J.A. High S., Brentwood
Blount, C. Nelson H., Clapham Common
Blyth, B.O. Ascham Coll., Clacton-on-Sea
Bodger, J.R. Barton S., Wisbech
Bond, A.G. Modern S., Gravesend
Bonds, W.H. Tudor H., Denmark Hill
Bonwick, L.C.T. Claremont Coll. S., Forest Gate
Boraston, J.P.S. Gram. S., Sale
Boret, O. Deal College
Botwood, C.A. Comm. Coll., York
Bow, F. Brunswick H., Maidstone
Bowering, J.D. Wilsford H., Devizes
Bowles, R.W. Holt H., Fakenham
Bowman, J. Cambridge H., Cliftonville, Margate
Boyle, E.H. Southdown Coll., Eastbourne
Boyne, R. The High S., Blackpool
Bracewell, C.H. Eversley S., Southwold
Bradbury, D.P. Colebrook H., Bognor
Brade, J.R. Christ Church Higher Grade S., Southport
Bradley, S. Bilton Grange S., Harrogate
Bradshaw, C.F. Arlington Pk. Coll., Chiswick
Bramley, J. Bilton Grange S., Harrogate
Brass, E.S. Tudor H., Denmark Hill
Bray, W.E. Barton S., Wisbech
Brewer, J.E. Bradley High S., Newton Abbot
Brinsley, F. Modern S., Southport
Brittan, S. St. Leonards Coll. S.
Broadhead, C.R. New Coll., Harrogate
Brodrick, E. The High S., Blackpool
Brooks, E.C. Wilsford H., Devizes
Brooks, S.J.M. Wycliffe Coll., Littlehampton
Brown, C.S. The Coll., Gt. Yarmouth
Brown, G.P. Duncan H., Gt. Yarmouth
Brown, S.P. Camden Road Coll S., N.
Browne, S.N. Belle Vue H., Norwich
Bryant, J.H. Brunswick H., Maidstone
Buckley, A.M.E. Clifton Coll., Harrogate
Burningham, S.A.H. Elmhurst S., Kingston-on-Thames
Burrows, A.C. Broadgate S., Nottingham
Butterworth, H.P. Farnworth Gram. S.
Byford, C. Sudbury Gram. S.
Calder, W.G. Albert H., Carlisle
Campbell, F.R. St. Aubyn's, Woodford Green
Campbell, S.G. Barton S., Wisbech
Candy, P. St. John's Coll., Frome
Cannon, A.C. Wadham S., Liskeard
Cannon, H.C. Ivel Bury S., Biggleswade
Capp, F. Deal College
Caro, J.P. Maida Vale S., W.
Carpenter, E.C. Croad's S., King's Lynn
Carpenter, R.J. Gram S., Taplow
Carson, L.H. Victoria Coll., Congleton
Carter, H.B. Private tuition
Carter, L. Warwick H., Southsea
Carter, W. Heston H., Heston, Hounslow
Carter, W.R. Halstead Gram. S.
Cartwright, A.R. Brean H., Weston-s.-Mare
Cassé, E.J. Gram. S., Clacton-on-Sea
Castle, M.A. Duncan H., Gt. Yarmouth
Cave, E.M. Christ Church Higher Grade S., Southport
Cavey, A. Jersey Modern S.
Chadwick, J.H. Hopton Congregational S., Mirfield
Chambers, R. Modern S., Gravesend
Champion, L. Gram. S., Wallington
Chandos, F.L. Hounslow Comm. Coll.
Chapman, B.E. Holt H., Fakenham
Chapman, E. Addington Sq. S., Margate
Charlton, C.F. Gram. S., Sale
Charman, W.S. Hillside S., Haslemere
Charrosin, H.E. Modern S., Gravesend
Chase, P.C. Cambridge H., Cliftonville
Cheetham, G. Victoria Park S., Manchester
Chivers, H.F. Gram. S., Devizes
Christian, J.P. Gram. S., Shoreham
Chrystal, C.B. Taunton School
Chubb, T.H. Tudor H., Denmark Hill
Clapp, L.J. Mount Radford S., Exeter
Claridge, F.G. Gram. S., Wallington
Clarke, C.G. Catholic Gram. S., St. Helen's
Clarke, J.H.P. Camden Road Coll. S., N.
Clarke, T.P. Camden Road Coll. S., N.
Clayton, M.C. Barton S., Wisbech
Clevely, C.C. Gram. S., Clacton-on-Sea
Cliff, A.G. Barton S., Wisbech
Cliffe, C. Springfield Coll., Acton Hill
Clift, A.J. Chandos Gram. S., Winchcombe
Cline, G.F. Caversham H., Caversham
Clogg, A. Wadham S., Liskeard
Coaker, H. Tudor H., Denmark Hill
Cohen, B. Jewish Coll., Margate
Cohen, D. Jewish Coll., Margate
Cohen, P. Tivoli H., Gravesend
Cohen, S. Jewish Coll., Margate
Cohen, W. Jewish Coll., Margate
Colbourne, L. Deal College
Colegrave, L. The School, Banbury
Coleman, F.B. Sandwich School
Collet, P. Gram. S., Wallington
Collier, J. Clifford S., Beckington, Bath
Colmer, A.C. Wadham S., Liskeard
Colson, A.D. High S. for Girls, Wanstead
Compton, S. St. John's Coll., Frome
Coningham, H. Loughton School
Conroy, W.J. Emwell S., Warminster
Constantine, P. Lytham Coll., Lancs.
Cook, N.R. Stranraer, Fareham
Cooke, C.J.C. Whitworth S., Derby
Cose, P.H. Bradley High S., Newton Abbot
Court, G.A.A. Holm Vale S., Nottingham
Cousens, R.W. Middle Class S., Sheffield
Cowle, A. Deal College
Criddle, E.R. The Coll., Weston-s.-Mare
Critchett, H.E. Sandwich School
Crocker, C.J. Northgate S., Winchester
Cross, A.E. Lyncombe S., Titchfield
Cross, W.C. Southampton Boys' Coll.
Crowle, L.E.D. St. Austell College
Culf, H. Earls Colne Gram. S.
Cummins, J.R. Modern S., Lowestoft
Dacombe, C.J. Boys' Coll. S., Aldershot
Dallas, W.F. Northgate S., Winchester
Daniel, J.O. Holsworthy Middle S.
Daniels, C.W. Belle Vue H., Norwich
Davey, J.M. Ellesmere S., Harrogate
Davies, W.A. The Coll., Rock Ferry
Davys, W.H. Avenue H., Sevenoaks
Dawson, C. Gram. S., Birkdale
Dawson, F. St. Leonards Coll. S.
Dawson, J.T. Christ Church Higher Grade S., Southport
Day, C.F. High S., Brentwood
Day, J.H. Wycliffe Coll., Littlehampton
Dee, D.R. Gram. S., Devizes
Delaney, J.C. High S., St. Helier's, Jersey
Delaney, T.M. High S., St. Helier's, Jersey
Denny, R.L. Froebel H., Devonport
Dent, G.R. Ellesmere S., Harrogate
Derbyshire, F. Gram. S., Blackpool
Dew, F.O. Duncan H., Gt. Yarmouth
De Wardt, A. Modern S., Gravesend
Dickinson, E.C. Eversley S., Southwold
Dingle, J.G. St. Austell College
Discombe, W.H. Bradley High S., Newton Abbot
Dix, W.R. Gram. S., Shoreham
Doble, R.C. Marlborough Coll., Tue Brook, Liverpool
Dodds, P. Deal College
Doolan, E. Catholic Gram S., St. Helen's
Dorey, F.L. Oxenford H., St. Lawrence, Jersey
Doubleday, J.E. Taunton School
Down, T.H. Jersey Modern S.
Dowse, T.W. High School, Thorpe
Drake, A.E.D. Borden Gram. S.
Drake, H.M. Crossley & Porter S., Halifax
Draper, M.P. The Tutorial S., Penarth
Drew, A.G. Boys' Coll. S., Aldershot
Du Boisson, L. Christ Church Higher Grade S., Southport
Dunderdale, A. Seaford College
Dunn, C.W.S. Eversley S., Southwold
Durban, F.W.G. Sandwich School
Dutton, G. Brunswick H., Maidstone
Du Val, J.G. Oxenford H., St. Lawrence, Jersey
Eardley, T.E. Victoria Coll., Congleton
Easton, A. Addington Sq. S., Margate
Easton, F.J. St. John's Coll., Brixton
Eckersall, K.W. N. Darley National S., Darley Dale
Edwards, D.G. High S., St. Helier's, Jersey
Edwards, R.H. Modern S., Gravesend
Elder, R.S. Sherwood H., Woolwich Common
Eldret, A.B. Hatfield Coll. S.
Elkington, S.H. New Coll., Harrogate
Ellis, R. Bilton Grange S., Harrogate
Elliston, R.W.A. Sudbury Gram. S.
Elphick, W. Highfield S., Chertsey
Elsworth, F.L. Marlborough Coll., Tue Brook, Liverpool
Elvin, A.C. Gram. S., Dereham
Embry, W.B. Taunton School
Endicott, G.J. Bradley High S., Newton Abbot
England, G. Bilton Grange S., Harrogate
Escott, L.H. St. Austell College
Evers, H. Saham Coll., Watton
Evison, C.T. Barton S., Wisbech
Fear, H.R. Kingsholme S., Weston-s.-Mare
Fedderman, J. Tivoli H., Gravesend
Fenton, J. Gram. S., Blackpool
Fereman, R. St. Austell College
Field, C.E. Lifford Coll., Scarborough
Finnemore, G.F. The Briary, Northwood
Fisher Brown, C.L Roseberry H., Scarborough
Fiske, G.E. Eversley S., Southwold
Fitchie, D. Grimshaw Street British S., Preston
Flanagin, A.L. Onslow H., Battersea Rise, S.W.
Flatau, H. Springhaven, Eastbourne
Fletcher, F.N. Gram. S., Shoreham
Flint, N.S. Lyle House, Marlow
Flook, G. Sandwich School
Flower, F.G. St. Leonards Coll. S.
Forrest, H.S. Girls' S., Mechanics' Inst., Pudsey
Foster, G.K. Clifton Coll., Harrogate
Foster, J.W. Crossley & Porter S., Halifax
Fowkes, H. Christ Church Higher Grade S., Southport
Francis, P.J. Avenue H., Sevenoaks
Frank, C. Richmond Hill School
Frank, O.D. New Coll., Harrogate
Franklin, H.V. Christ Church Higher Grade S., Southport
Freedman, J. Jersey Modern S.
Fuidge, E.S. Southampton Boys' Coll.
Fuller, J.R. Loughton School
Fulljames, S. Brunswick H., Maidstone
Fussell, W. Clifford S., Beckington, Bath
Gaud, P. Froebel H., Devonport
Gaudin, R. Jersey Modern S.
Gardner, J.N. Modern S., Southport
Garnham, H.L. St. Aubyn's, Woodford Green
Garrard, T.K. Hatfield H., St. Leonards-on-Sea
Garrett, F. The School, Banbury
Garsden, H. Gram. S., St. Anne's-on-Sea
Gates, A. St. Leonards Coll. S.
Gavey, P.J. Oxenford H., St. Lawrence, Jersey
Geipel, L.H.H. Roseberry H., Scarborough
Gendle, S.W. Bradley High S., Newton Abbot
George, J.W. Taunton School
George, P.A. Saham Coll., Watton
George, S. Taunton School
George, S.E. Taunton School
Gibb, D.J. Victoria Park S., Manchester
Gibbons, H.A. De Grisley Lodge, Southsea
Giblett, W.T. Loughton School
Gilbert, O. Crompton S., Southend-on-Sea
Gilham, J. Brunswick H., Maidstone
Gill, J.C. Kilgrimol S., St. Anne's-on-Sea
Gill, P. Wadham S., Liskeard
Gill, T.H. Borden Gram. S.
Gill, W.T. Mary Street H., Taunton
Gillham, B. Southampton Boys' Coll.
Gissing, H. Deal College
Gledhill, S.V. Eton H., Southend-on-Sea
Gomm, J. Springfield Coll., Acton Hill
Gomm, W. Springfield Coll., Acton Hill
Goodman, R. The School, Banbury
Goodman, S. Springhaven, Eastbourne
Goodsall, R.H. The College, Tankerton-on-Sea
Goodwin, S. Gosberton Hall S., nr. Spalding
Goss, E.H. St. Winifred's S., Torquay
Goswell, A.E. British S., Wokingham

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BOYS, LOWER FORMS—*Continued.*

Gould, H.R. Highfield S., Chertsey
Graham, D. Commercial S., Horsforth
Gray, C.C. Lyle House, Marlow
Gray, D. Jersey Modern S.
Greig, G.E. Cliftonville Coll., Margate
Grendon, H.W. Modern S., Lowestoft
Gristwood, A.D. Gram. S., Wallington
Groom, R.W. Barton S., Wisbech
Grout, S Hounslow Comm. Coll.
Gurney, F.G. Malden Coll., Surrey
Haddacks, A.P. Victoria Coll., Congleton
Haigh, H. Ashley H., Worksop
Haines, J.N. Westfield H., Reading
Hairsine, G. Duncan H., Gt. Yarmouth
Halford, L.R. Broadgate S., Nottingham
Hall, H. Crompton S., Southend-on-Sea
Hall, J.T. Victoria Park S., Manchester
Hall, S.O. Chandos Gram. S., Winchcombe
Halliwell, H.A. Gram. S., Scarborough
Hambly, W.H. Wadham S., Liskeard
Hammond, C.H. Christ Church Higher Grade S., Southport
Hancock, P. St. Austell College
Hannah, C.H. Elm Bank S., Nottingham
Hannah, C.W. Elm Bank S., Nottingham
Hards, H.S. Brunswick H., Maidstone
Harmsworth, A.R. Raleigh Coll., Brixton
Harnor, F.H. Crossley & Porter S., Halifax
Harrington, S.C. Brunswick H., Maidstone
Harris, A. St. John's Coll., Frome
Harris, A.W. Emwell S., Warminster
Harris, L.C. Highfield S., Chertsey
Harris, M. Townley Castle S., Ramsgate
Harrison, F. Gram. S., Wallington
Haward, C.R. Halstead Gram. S.
Hawes, A.M. Seaford College
Hawgood, T. Stranraer, Fareham
Hawker, P.C. St. John's Coll., Brixton
Hawkins, G. New Brighton High S. for Boys
Hawkins, L. Deal College
Hayes, C.C. Roseberry H., Scarborough
Hayes, S.R. Croad's S., King's Lynn
Hazard, W.N. Eversley S., Southwold
Heald, T.P. Sandwich School
Healy, W. Bilton Grange S., Harrogate
Heane, A.F. Elm Bank S., Nottingham
Heathcote, R. Bilton Grange S., Harrogate
Hebditch, B.S. Taunton School
Hemphill, H.H. Stanley H., Cliftonville, Margate
Hemphill, R.D. Stanley H., Cliftonville, Margate
Henson, L.L. Cliftonville Coll., Margate
Herd, J. Bilton Grange S., Harrogate
Herdman, J.S. Croad's S., King's Lynn
Herring, E.J.C. Gram. S., Wallington
Hewitt, C.P. Brunswick H., Maidstone
Heyes, W. Christ Church Higher Grade S., Southport
Hill, A.E. Emwell S., Warminster
Hill, E. Deal College
Hill, R.H. Duncan H., Gt. Yarmouth
Hill, W.L. Gram. S., Sale
Hill, W.S. St. Winifred's S., Torquay
Hinder, L.H.S. St. Aubyn's, Woodford Green
Hingley, E. Gosberton Hall S., nr. Spalding
Hinman, C.P. Cambridge H., Cliftonville, Margate
Hobson, A.P. Northampton H., Cheltenham
Hobson, H.S. Stanley H., Cliftonville, Margate
Holgate, J. Farnworth Gram. S.
Holland, C.S. Modern S., Southport
Holliday, S. The High S., Blackpool
Hollings, H Comm. Coll., York
Hopkins, H. Kilgrimol S., St. Anne's-on-Sea
Horne, J.C. Hounslow Comm. Coll.
Horrocks, J.C. Marlborough Coll., Tue Brook, Liverpool
Horth, H.R. 116 St. Owen St., Hereford
Hough, A.D. St. Aubyn's, Woodford Green
Howard, M.S. Borden Gram. S.
Howe, G.H. Ashley H., Worksop
Howes, F.G. Modern S., Lowestoft
Howlett, C.T. Saham Coll., Watton
Hubert, F.W. Oxenford H., St. Lawrence, Jersey
Huddy, G.P.B. Wadham S., Liskeard
Huddy, J.C. Taunton School
Huelin, H.F. Harleston H., St. Lawrence, Jersey
Hunt, M.J.C. Stranraer, Fareham
Hunt, R.F. Richmond Hill School
Hutchinson, W.E. Eversley S., Southwold
Hyams, S. Great Ealing S., Ealing
Hyland, J.C. Elmhurst S., Kingston-on-Thames
Hyne, L.J. Oxenford H., St. Lawrence, Jersey
Ingham, P.W. Modern S., Southport
Inglis, H.M. Victoria Coll., Congleton
Ingman, E.G. Modern S., Gravesend
Ingram, J.S. Kingsholme S., Weston-s.-Mare
Ingram, R.S. Wilsford H., Devizes
Insell, J.R. Caversham H., Caversham
Insley, E.J. Oxenford H., St. Lawrence, Jersey
Irons, M.C.C. Crossley & Porter S., Halifax
Isaacs, A. Tivoli H., Gravesend
Isaacs, S. Townley Castle S., Ramsgate
Jackson, F.R. Boys' Coll. S., Aldershot
Jackson, P.S. Marlborough Coll., Tue Brook, Liverpool
Jackson, R. Stanley H., Cliftonville, Margate
Jackson, S. Hopton Congregational S., Mirfield
Jackson, T.A. Oxenford H., St. Lawrence, Jersey
Jacobs, D. Tivoli H., Gravesend
Jameson, C.V. Modern S., Gravesend
Jamrach, H.C. Anerley Coll., S.E.
Jasper, V. Gram. S., Wallington
Jeeves, C.L. Ivel Bury S., Biggleswade
Jefferys, W.S. Emwell S., Warminster
Jenkins, B. Crompton S., Southend-on-Sea
Jenkins, C.M. Taunton School
Jenkins, P. Southampton Boys' Coll.
Jennings, M. Gram. S., Wallington
Jennings, P. Commercial Coll., Acton
Jigins, R.A. Modern S., Gravesend
Job, R.S. Hatfield H., St. Leonards-on-Sea
Jolliffe, I. Catholic Gram. S., St. Helen's
Jones, A.W. Highfield S., Chertsey
Jones, J.M. Taunton School
Jones, W. Wadham S., Liskeard
Jones, W. Salway Coll., Leytonstone
Johnson, A. Crossley & Porter S., Halifax
Johnson, J. Crompton S., Southend-on-Sea
Johnson, J.E. Cliftonville Coll., Margate
Johnson, R.L. New Coll., Harrogate
Jotham, F.B. Sandwich School
Kappey, C.F.M. South View, St. Leonards-on-Sea
Kennedy, E.E. St. James's Coll. S., Jersey
Keyte, T. Chandos Gram. S., Winchcombe
Kilpin, O.E. Hatfield H., St. Leonards-on-Sea
King, S.C. Haringey Park S., N.
Kinghan, C. Bracondale S., Norwich
Kinmont, H. Addington Sq. S., Margate
Kirkham, H. Bilton Grange S., Harrogate
Kirkham, K.M. Stanley H., Cliftonville, Margate
Knowles, C.R. New Coll., Harrogate
Knowles, C.W. Christ Church Higher Grade S., Southport
Küll, G.R. Arlington Park Coll., Chiswick
Lacey, R.F. Loughton School
Lake, C.M. Elmhurst S., Kingston-on-Thames
Lake, W.J. Elmhurst S., Kingston-on-Thames
Lalonde, E.C.P. Kingsholme S., Weston-s.-Mare
Lancaster, A.H. Wilsford H., Devizes
Larkins, W.H. Modern S., Gravesend
Laurens, P. Harleston H., St. Lawrence, Jersey
Lawrence, R.W. Tudor H., Denmark Hill
Lawson, R.W. Borden Gramm. S.
Lazareck, E. Springhaven, Eastbourne
LeBrun, J. Jersey Modern S.
LeCocq, F.B. High S., St. Helier's, Jersey
Leeson, B.A. Highfield S., Chertsey
Leftwich, H.J. Grammar S., Cowes
LeGresley, E.F. High S., St. Helier's, Jersey
LeGrice, A.M. Modern S., Lowestoft
LeGrice, C.H. Modern S., Lowestoft
LeGrice, E.C. Croad's S., King's Lynn
Leigh, J. Gram. S., Blackpool
LeMaistre, E. St. Mary's Coll. S., Jersey
Leo, M.L. Great Ealing S., Ealing
Leslie, C.R. The Briary, Northwood
Letchford, G. Sudbury Gram. S.
Lewis, H. Great Ealing S., Ealing
Lewis, S.J.B. Broadgate S., Nottingham
Lewtas, O. Gram. S., Sale
Linsell, H.R. Halstead Gram. S.
Lippiatt, E. Clifford S., Beckington, Bath
Little, R. Albert H., Carlisle
Liver, H. Westcliff High S., Poulton-le-Fylde
Lloyd, P.C. Winchester H., Bristol
Logie, R. Christ Church Higher Grade S., Southport
Long, G.M. Boys' Coll. S., Aldershot
Lord, F.A. Loughton School
Lord, R.H. Sandwich School
Luce, R. Jersey Modern S.
Lunn, H.N. Handel Coll., Southampton
Lyon, J.S. Tivoli H., Gravesend
MacKenny, F. Jersey Modern S.
MacLean, T.B. Modern S., Gravesend
Macphail, K.W.H. Taunton School
Mahon, L.A. New Brighton High S. for Boys
Mahoney, C.J. St. Austell College
Mainwaring, C.J. Hounslow Comm. Coll.
Malby, P. Croad's S., King's Lynn
March, G. Addington Sq. S., Margate
Marcus, M. Townley Castle S., Ramsgate
Marks, C.L.E. Townley Castle S., Ramsgate
Marler, B.K. Commercial Coll., Acton
Marriott, J. The High S., Blackpool
Marriott, R.T. Lyncombe S., Titchfield
Marsh, J.W. The Commercial S., Stretford
Martin, G.P. Private tuition
Martin, H.O. Modern S., Southport
Martin, W. Farnworth Gram. S.
Martyn, R.F. Eversley S., Southwold
Masheter, T.L. Gram. S., Blackpool
Mashiter, R.H. Lancaster Coll., Morecambe
Massey, G. St. Aubyn's, Woodford Green
Massingham, H. Croad's S., King's Lynn
Matheson, D. Wadham S., Liskeard
Mathieson, W. Royal Coll., S. Shields
Matthews, C.H. Gram. S., Shorcham
Matthews, E.W. Saham Coll., Watton
Matthews, S.Stanley H., Cliftonville, Margate
McCall, R.A. Victoria Park S., Manchester
McCormack, P.H. Modern S., Southport
McCulloch, J. Albert H., Carlisle
McIlroy, H.D. Waldron H., Havant
McKean, J.D. Girls' Coll., Penmaenmawr
McNeill, H.T. High S., St. Helier's, Jersey
Melhuish, I.B.V. Wellington Rd. S., Taunton
Miall, E. St. Leonards Coll. S.
Middleton, G.R. Westcliff High S., Poulton-le-Fylde
Milkins, S.F. The Coll., Weston-s.-Mare
Millar, A.L. Saham Coll., Watton
Millard, N.M. Chichester H., Mortimer
Miller, D.M. Haringey Park S., N.
Miller, J.D. Catford Coll. S., Lewisham
Miller, R.W. Seaford College
Millican, G.D. Gram. S., Shoreham
Mills, N. St. John's Coll., Frome
Mills, W. Gram. S., Newton Abbot
Milne, R. The Tutorial S., Penarth
Mitchell, D. Brunswick H., Maidstone
Mitchell, G. Maida Vale S., W.
Mittell, B.E.G. Brunswick H., Maidstone
Monier-Williams, R.H. Private tuition
Montagu, L. Great Ealing S., Ealing
Montague, J.E. Loughton School
Moore, L.C.L. Brean H., Weston-s.-Mare
Morfett, F.R. Albion Place S., Maidstone
Morgan, A.G. Public Coll., Torquay
Morgan, M.S. Seaford College
Morris, C.E. Wadham S., Liskeard
Morris, C.O. Langford H., Brighton
Morton, C.L. Tudor H., Denmark Hill
Moutrie, C. Boys' Coll. S., Aldershot
Muchan, C. Royal Deaf S., Old Trafford
Mulliner, N. Modern S., Southport
Munns, A. Addington Sq. S., Margate
Munns, H. Addington Sq. S., Margate
Murgatroyd, S. Crossley & Porter S., Halifax
Murray, G. Hounslow Comm. Coll.
Neal, G. Crompton S., Southend-on-Sea
Neave, R.L. Anerley College, S.E.
Newbould, B. Ashley H., Worksop
Newman, P.V. Littleton H., Knowle, Bristol
Newman, R.P. Taunton School
Nicholson, J. Albert H., Carlisle
Noakes, H.J. Gram. S., Clacton-on-Sea
Norman, H.P. Kingsholme S., Weston-s.-Mare
Norman, J.M. Oxenford H., St. Lawrence, Jersey
Norman, P.R. The College, Gt. Yarmouth
Normandale, C.L. Sudbury Gram. S.
North, R.W. Ashley H., Worksop
Northeast, A.H. Emwell S., Warminster
Nott, C. Marlborough Coll., Tue Brook, Liverpool
Nunnerley, H. Modern S., Southport
Nuttall, F. Farnworth Gram. S.
Nuttall, J. Farnworth Gram. S.
Oldfield, W.L. New Coll., Harrogate
Oliver, C. Holsworthy Middle S.
Olver, F.R. St. Austell College
Openshaw, N. Farnworth Gram. S.
Osborne, W.T. Oxford H., Bexhill-on-Sea
Osmond, C.F.S. Cambridge H., Bath
Overett, T.H. Pierremont Coll., Broadstairs
Packham, A.L. Malden Coll., Surrey
Page, R.N. Ascham Coll., Clacton-on-Sea
Pain, H. Deal College
Palliser, H. Bilton Grange S., Harrogate
Palmer, A.A. Loughton School
Palmer, F.S. Tudor H., Denmark Hill
Panment, C. Croad's S., King's Lynn
Parker, D. Crossley and Porter S., Halifax
Parker, W. Boys' Coll. S., Aldershot
Parkes, S.A. Gram. S., Cowes
Parkinson, J. Gram. S., Blackpool
Parmenter, P.V. Earls Colne Gram. S.
Parr, R. Crompton S., Southend-on-Sea
Parsons, F.C. Hounslow Comm. Coll.
Patterson, A.N. Boys' Coll. S., Aldershot
Paull, F.P. Southdown Coll., Eastbourne
Payne, E.T. Modern S., Gravesend
Paynter, F.J.H. Springfield Rectory, Chelmsford
Paynter, H.S. Springfield Rectory, Chelmsford
Pearson, P. Bilton Grange S., Harrogate
Peet, A.G. Christ Church Higher Grade S., Southport
Peill, E.J. Pierremont Coll., Broadstairs
Perham, E. Clifton Coll., Harrogate
Peters, D.E. High S., Devonport
Pett, F. Brunswick H., Maidstone
Pettit, H.C. Albion Place S., Maidstone
Phillips, E.C. The Tutorial S., Penarth
Phillips, G.W. Comm. S., Horsforth
Phillips, W.H. High S., Devonport
Philpot, F.E. St. Mary's Coll. S., Jersey
Philpot, L.C. Hatfield H., St. Leonards-on-Sea
Philpot, P.A. Marlborough Coll., Tue Brook, Liverpool
Piquet, H. Oxenford H., St. Lawrence, Jersey
Pittock, J. Deal College
Pitts, A.J. Public Coll., Torquay
Plummer, E.V. Commercial Coll., Acton
Plummer, H.F. Gosberton Hall S., nr. Spalding
Pocock, R. Highfield S., Chertsey
Pollitt, J. New Brighton High S. for Boys
Poole, A.H. Elmhurst S., Kingston-on-Thames
Posgate, A. Modern S., Gravesend
Pouncy, R. Handel Coll., Southampton
Powell, J.M. The Tutorial S., Penarth
Powell, R.W. Willesden Preparatory S., N.W.
Price-Smith, R.T. Hatfield Coll. S.
Priestley, S. Claremont Coll. S., Forest Gate
Prior, L.M.S. Raleigh Coll., Brixton
Prismall, A.J. Northgate S., Winchester
Prowse, M. Addington Sq. S., Margate
Psimoulis, P.D. Victoria Park S., Manchester
Pullen, W.F. Sandwich School
Quelch, A.F. Brunswick H., Maidstone
Raby, G.H. Loughton School
Radcliffe, G.R. New Brighton High S. for Boys
Raine, H.M. Modern S., Gravesend
Rake, P.T. Wadham S., Liskeard
Ramsden, R. St. John's Coll., Frome
Rands, A.J. Gram. S., Wallington
Ransom, R.P. Sudbury Gram. S.
Rapson, L. Wadham S., Liskeard
Ray, R.E. Colebrook H., Bognor
Reed, H.H. Percy H., Finchley Rd., N.W.
Rees, C. Holsworthy Middle S.
Reeve, H.W. Sudbury Gram. S.
Rendell, P.C. Wilsford H., Devizes
Renout, S.J. Coll. S., St. John's, Jersey
Renshaw, E. Victoria Park S., Manchester
Rew, J. Pierremont Coll., Broadstairs
Richardson, C.F.J. Brunswick H., Maidstone
Riggs, S. Loughton School
Ring, G. St. Leonards Coll. S.
Ringwill, H.J. The College, Weston-s.-Mare
Rippengill, S. Croad's S., King's Lynn
Robbins, C.A. Taunton School
Roberts, H. Jersey Modern S.
Roberts, H. Kilgrimol S., St. Anne's-on-Sea
Roberts, J.C. Cliftonville Coll., Margate
Rocca, F.L. Gram. S., Sale
Rogers, C. Cambridge H., Bath
Rogers, H.K. The Tutorial S., Penarth
Rogers, W.T. High S., Brentwood
Romeril, S.M. Harleston H., St. Lawrence, Jersey
Ronayne, L. Gram. S., Wallington
Rose, S. Addington Sq. S., Margate
Rosenthal, L. Great Ealing S., Ealing
Ross, L. Northgate S., Winchester
Rowbotham, T.C. Malden Coll., Surrey
Royle, W.A. Christ Church Higher Grade S., Southport
Rudge, H.S. Avenue H., Sevenoaks
Rundle, J.R. Wadham S., Liskeard
Russell, A.R. High S., Brentwood
Sampson, F.T. St. Aubyn's, Woodford Green
Sampson, J.A. Gram. S., Newton Abbot.
Samson, G.T. St. John's, Worthing
Sanders, F.G. Anerley College, S.E.
Sanger, W. Heston H., Heston, Hounslow
Savill, H.B. De Grisley Lodge, Southsea
Sayers, B. Tivoli H., Gravesend
Scarisbrick, J. Modern S., Southport
Schorr, M. Tivoli H., Gravesend
Scofield, J.C. Malden Coll., Surrey
Scott, B.J. Maida Vale S., W.
Scott, H. Commercial S., Horsforth
Seal, H.O. Richmond Hill School
Self, R.W.F. Modern S., Lowestoft
Sennett, C.C. Belle Vue H., Norwich
Sennett, N.S. Nelson H., Clapham Common
Seward, A.G. Eversley S., Southwold
Seward, R.F. Eversley S., Southwold
Shackell, A. Jersey Modern S.
Shackell, D.R. Emwell S., Warminster
Shapiro, B. Jewish Coll., Margate
Sharp, F. The School, Banbury
Shaw, C.G. Boys' High S., Wareham
Shea, L.W. Merton H., Cliftonville
Shearman, H.J. Sandwich S.
Shepard, N. Addington Sq. S., Margate
Shepperson, L. Gram. S., Ramsey, Hunts.
Sherwin, S. Christ Church Higher-Grade S., Southport
Shurlock, C.P. Highbury Park S., N.
Simmons, G.E. Great Ealing S., Ealing
Sims, C.F. High S., Devonport
Skeif, F. Gram. S., Ramsey, Hunts.
Skelsey, D. 3 Stainbeck Lane, Chapeltown
Skinner, F.L. Croad's S., King's Lynn
Skudder, G.A.R. Tivoli H., Gravesend
Slater, H.T. Middle-Class S., Sheffield
Slater, J.F. Gram. S., Sale
Slatter, E.C.M. Haringey Park S., N.
Slee, H.N. Holsworthy Middle School
Smale, F.H. St. Winifred's S., Torquay
Smart, F. Gram. S., Devizes
Smith, A.V.W. Chandos Gram. S., Winchcombe
Smith, H.G. Lyncombe S., Titchfield
Smith, H.J. Kingsholme S., Weston-s.-Mare
Smith, H.L.C. Broadgate S., Nottingham
Smith, J. de C. Duncan H., Gt. Yarmouth
Smith, R.H. Eton H., Southend-on-Sea
Smith, V.C.E. Colebrook H., Bognor
Smith, W.P. Gram. S., Sale
Smythe, J.H. Taunton School
Sniders, A. Jewish Coll., Margate
Snowden, H.E. Modern S., Gravesend
Snowdon, S. Bilton Grange S., Harrogate
Solman, W.C. Brunswick H., Maidstone
Soul, A.H. St. Leonards Coll. S.
Southwell, C.S. Private tuition
Spaeth, C.L.L.J. Richmond Hill School
Speed, A.V. Croad's S., King's Lynn
Spencer, A.E. Edgbaston Acad., Birmingham
Sproston, E. Victoria Coll., Congleton

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Boys, Lower Forms—*Continued.*

Sproston, J.B. Victoria Coll., Congleton
Staddon, T.L. St. Winifred's S., Torquay
Start, A.G. Colebrook H., Bognor
Stephens, W.K. Froebel H., Devonport
Stinchcomb, H.J. Winchester H., Bristol
Stokes, W.L. Highfield S., Chertsey
Stone, T.H. Taunton School
Storey, W.W. New Brighton High S. for Boys
Strauss, A. Tivoli H., Gravesend
Stubbings, R.A. Heston H., Heston, Hounslow
Swarbrick, E. Malden Coll., Surrey
Swithinbank, H. 3 Stainbeck Lane, Chapeltown
Sworder, M. Cambridge H., Cliftonville
Sworder, R.W. St. Aubyn's, Woodford Green
Sykes, J. Crossley & Porter S., Halifax
Tasker, T.H. Modern S., Southport
Tate, T.C. Colebrook H., Bognor
Tattersall, W.P. Lancaster Coll., Morecambe
Taylor, B.U. Taunton School
Taylor, H. Crompton S., Southend-on-Sea
Taylor, R.L. Gram. S., Birkdale
Taylor, S. Addington Sq. S., Margate
Taylor, W.J. Christ Church Higher-Grade S., Southport
Teece, L.F. Modern S., Gravesend
Thain, H.W. Highfield S., Chertsey
Thatcher, R.L. Winchester H., Bristol
Theckston, J. New Brighton High S. for Boys
Thomas, F.M. Commercial Coll., Acton
Thomas, W.C. Farnworth Gram. S.
Thompson, A.L. Camden Road Coll. S., N.
Thompson, J.S. Victoria Park S., Manchester
Thornton, R.G. Mary Street H., Taunton
Tiffin, T. Albert H., Carlisle
Titcombe, W.J.C. Gram. S., Devizes
Todd, W.A. Victoria Park S., Manchester
Tolmie, O.W. Pierremont Coll., Broadstairs
Toone, W.A. Colebrook H., Bognor
Townend, W.P. Seaford College
Tozer, P.J. St. Winifred's S., Torquay
Trevors, E. Deal College
Truscott, E. St. Austell College
Tucker, L. Jersey Modern S.
Tuite, M.A.W. Eversley S., Southwold
Turnell, E.R. Christ Church Higher-Grade S., Southport
Turner, E.C. Collegiate S., Henley-on-Thames
Turner, F.H. Gram. S., Shoreham
Turner, M.F. Cambridge H., Cliftonville, Margate
Tyler, E.C. Earls Colne Gram. S.
Tyler, R.W. Castle Dene S., Newport, I.W.
Tytherleigh, W.J. Wilsford H., Devizes
Uffelmann, A.W.H. Loughton School
Usher, H.B. Westcliff High S., Poulton-le-Fylde
Vaughan, F.W. Christ Church Higher-Grade S., Southport
Vaughan, R.M. Gosberton Hall S., nr. Spalding
Vernon, G.H. Victoria Coll., Congleton
Vialls, E.F. Handel Coll., Southampton
Vickery, F.H. Brean H., Weston-s.-Mare
Vinnicombe, W. Bradley High S., Newton Abbot
Vinson, A. Taunton School
Vokes, A.J. St. John's Coll., Brixton
von Limburg, H. St. Aubyn's, Woodford Green
Wade, J. Victoria Park S., Manchester
Wainwright, L.A. Ascham Coll., Clacton-on-Sea
Walch, E. Commercial S., Horsforth
Waldegrave, A.H. Modern S., Gravesend
Walker, M.J.L. Eversley S., Southwold
Walker, T.B.T. Gram. S., Blackpool
Walker, W.F. The College, Highbury New Pk., N.
Wallis, J.S. Tivoli H., Gravesend
Walsh, G.P. Eversley S., Southwold
Walton, A.J. Kilgrimol S., St. Anne's-on-Sea
Wanstall, E.C. Cliftonville Coll., Margate
Ward, E.J. Cliftonville Coll., Margate
Ward, J.B. Barton S., Wisbech
Ward, W.A. Langford H., Brighton
Warder, E.J. Grammar S., Cowes
Warren, C.D. Borden Gram. S.
Warren, G. Brunswick H., Maidstone
Waterhouse, W.J. Modern S., Southport
Waterland, W.J.H. Ellesmere S., Harrogate
Watkins, G. Gram. S., E. Finchley
Watkinson, H.L. Farnworth Gram. S.
Watson, H.R. London Coll., Holloway Rd., N.
Watson, W.I.J. Private tuition
Watts, R.D. Taunton School
Webb, J.S. Avenue H., Sevenoaks
Webster, G.H. Highbury Park S., N.
Welsh, E.T. Loughton School
West, E.T. Stranraer, Fareham
West, W.E. Modern S., Gravesend
Wetherall, G.C. Cliftonville Coll., Margate
Wharram, C.E. Comm. Coll., York
White, C.M. Handel Coll., Southampton
White, G.F. The Tutorial S., Penarth
White, R.D. Lancaster Coll., West Norwood
Whitford, E.H. St. Austell College
Whittaker, J.H. Kilgrimol S., St. Anne's-on-Sea
Widdowson, E.W. Public Coll., Torquay
Wilkinson, S.C. Belle Vue H., Norwich
Willcock, A. Gram. S., Sale
Williams, C.A. Mary Street H., Taunton
Williams, L. Deal College
Williams, O.E. Nelson H., Clapham Common
Williams, P.E.M. Wilsford H., Devizes
Willis, L.C. Darnley H., Gravesend
Willis, R.B. Christ Church Higher-Grade S., Southport
Wills, H. Public Coll., Torquay
Wills, T. Cambridge H., Bath
Wilson, A.G. Collegiate S., Henley-on-Thames
Wilson, J.G. Modern S., Southport
Wilson, N.M. New Brighton High S. for Boys
Wilson, R.B. Mary Street H., Taunton
Winch, P.C. Borden Gram. S.
Wiseman, R.C. The College, Gt. Yarmouth
Withers, S.D. Winchester H., Bristol
Witting, T.N. Grammar S., Scarborough
Wolfers, A. Jewish Coll., Margate
Womersley, W. Lytham Coll., Lancs.
Wood, L.N.E. The Cedars, Ealing
Wood, T.E. Oxenford H., St. Lawrence, Jersey
Woodcock, G.A. The College, Rock Ferry
Woodruff, C.J. Cliftonville Coll., Margate
Woolley, H. Victoria Coll., Congleton
Woolsey, R.J. Gram. S., Clacton-on-Sea
Worters, T. Sudbury Gram. S.
Worthington, B.G. Froebel H., Devonport
Wright, C.G. Sudbury Gram. S.
Wright, F.C. Brunswick H., Maidstone
Wright, H.J. Elmhurst S., Kingston-on-Thames
Wright, P. Albion Place S., Maidstone
Wright, T.W. Duncan H., Gt. Yarmouth
Wroth, L.A. Kingsholme S., Weston-s.-Mare
Wyatt, G.A.F. Wilsford H., Devizes
Wyatt, H.G.R. Wilsford H., Devizes
Yeo, A.R. Holsworthy Middle S.
Yeo, C. Holsworthy Middle S.
Zeitlin, M. Tivoli H., Gravesend

GIRLS.

Aitken, M. Princess Frederica S., Kensal Rise
Alcock, F. High S., Teignmouth
Aldham, V.I. Collegiate S., Brentford
Alexandre, C.E. St. James's Coll. S., Jersey
Amos, E.H. Warwick H., Roade
Anderson, E.F. Melbourne H., Clapton Square, N.E.
Anderson, M.R. Salisbury H., Plymouth
Anderson, W.G. Melbourne H., Clapton Square, N.E.
Anderton, M. Hopton Congregational S., Mirfield
Annacker, A. Conv. of Loreto, Hulme
Applin, M.C. Brooklyn High S., Leytonstone
Archer, M. Grimshaw Street British S., Preston
Armitage, D. Lifford Coll., Scarborough
Arrowsmith, E.B. Nicoll H., Willesden
Arthur, S. Brooklyn H., Wellington, Salop
Ashby, G.M. St. Lawrence's Inter. S., Long Buckby
Ashby, L.D. Forest Place School, Leytonstone
Ashman, E. Selwood S., Frome
Ashton, D.S. Sunnyholme S., Southport
Ashton, M.S. Sunnyholme S., Southport
Athey, E. Wellesley Terrace S., Liverpool
Atkins, M.B. Cornwallis High S., Hastings
Atkinson, M. Royal Deaf S., Old Trafford
Aylott, F.M. Bleak H., Brentwood
Ayres, M. Brook Green Coll., W.
Babbage, D. St. John's Mid. Cl. Girls' S., Up. Holloway
Bagger, V.E. Windycroft Coll., W. Hampstead, N.W.
Bagnall, N.C. Westwing Coll., Ryde
Bain, C.A. Mayfield Coll., Marlborough
Baker, M.E.W.S. Haslemere, Clapham Park, S.W.
Ball, M.A. Belvedere S., Birkdale
Ball, V.E. Woking High S.
Bamber, A.A. Highfield Coll., Blackpool
Bamford A.M. High S., Prestwich
Barata, O.R. Girls' Coll., Penmaenmawr
Barber, G.E.M. Fordeleigh Coll., Newton Abbot
Barker, D. Sherwood H., Woolwich Common
Barneby, E.S.B. Private tuition
Barnes, E.E. High S. for Girls, Staines
Barnes, V.M. Grosvenor S., Wokingham
Barnett, A.E. High S. for Girls, Coventry
Barry, I.M. Claremont Coll., Forest Gate
Bartlett, P.A. The College, Totnes
Barton, D. Hemdean H., Caversham
Barwick, M. Coborn S. for Girls, Bow, E.
Base, N.W. Forest Place S., Leytonstone
Bayley, F.E. St. John's Coll., Brixton
Beach, E.E. Dresden H., Evesham
Beare, W.M. Fordeleigh Coll., Newton Abbot
Beatty, C.M. Stafford H., Clacton-on-Sea
Beaumont, B.F.M. Y Garn, Bromley
Beeston, M.A. Y Garn, Bromley
Begrel, E.A. Six Roads S., St. Lawrence, Jersey
Bell, K.M. Nantly H., Hounslow
Bell, S.E. The Manor H., Driffield
Benbow, E.S. The Manor H., Driffield
Bennion, M. Private tuition
Bentall, F.M. Darnley H., Gravesend
Bentley, G. St. Helen's S, Streatham
Bentley, M.E. Grimshaw Street British S., Preston
Berthoud, M. Conv. of Loreto, Hulme
Best, C.S. Houndiscombe S., Plymouth
Bevis, E.K. Oakley High S., Southsea
Biaggini, E.F. Penrith High S., Stamford Hill, N.
Bibby, A.A. Westcliffe Coll., Southend-on-Sea
Bibby, E. Girtonville Coll., Aintree
Bice, E.M. Brean Down H., Burnham, Som.
Bice, W.B. Brean Down H., Burnham, Som.
Bicknell, D.E. Haldon View, Exeter
Bigg, M. Queen's S., Margate
Bigsby, H.E. Ladies' Coll., Margate
Binns, W.M. Highfield S., Croydon
Bishop, N.C. Oakley High S., Southsea
Blackburn, K.B. The Manor H., Driffield
Blatchley, D.M. Private tuition
Blaydon, B.S. Trevello H., Winton
Blundell, E. Royal Masonic Inst. for Girls, S.W.
Blundell, M.R. Haldon View, Exeter
Blunden, N.F. Ellerker Coll., Richmond
Blurton, I.H. Broadgate S., Nottingham
Blyth, S.G. Coll. S., Stanford-le-Hope
Boden, E. High S., Gravesend
Bolt, E. Salisbury Road S., Plymouth
Bond, E. Salisbury Road S., Plymouth
Bortwick, C. The College, Totnes
Bourne, G.M. St. Julian's Coll., W. Norwood
Bowden, L. St. Winifred's S., Torquay
Bowditch, J.W. Oakwood H., Brighton
Bowes, W.M. The Limes, Buckhurst Hill
Bowler, G.M. High S., Oakengates
Bowles, D.K. Girls' High S., Sudbury
Bowring, E.E.M. Brean Down H., Burnham, Som.
Braun, E.B. South Shore Coll., Blackpool
Brelsford, G. Adelphi H., Salford
Brewer, V. Maindee Lawn S., Newport, Mon.
Brett, E. The Close, Brighton
Bridges, J.A. Verecroft, Devizes
Briggs, M. Girtonville Coll., Aintree
Brightsmith, S. St. Monica's Girls' S., Herne Bay
Brimblecombe, H.W. Essex H., Saltash
Brook, L.L. Tivoli H., Gravesend
Brooke, F.M. Hopton Congregational S., Mirfield
Bromley, I.B. High S. for Girls, Coventry
Broom, F.H. Pengover, Saltash
Brown, A. Royal Masonic Inst. for Girls, S.W.
Brown, C. Wandsworth H., Heaton
Brown, E.J. Howard Coll., Bedford
Brown, D.G.E. Westbourne H., Cowes
Brown, E.A. Hartington H., Beckenham
Brown, E.P. Milton H., Atherstone
Brown, G.T. Parkside, Harrogate
Brown, L. Girtonville Coll., Aintree
Brown, M.H. Girls' Gram. S., Levenshulme
Brown, N. Wandsworth H., Heaton
Browne, P.M. St. Helen's S., Streatham
Buchanan, E.M. Atcombe H., Barry
Buchanan, M.F. Private tuition
Buer, E.W. Hemdean H., Caversham
Bulgin, D.E. Haldon View, Exeter
Bullivant, D. The Limes, Solihull
Burgess, J. Coborn S. for Girls, Bow, E.
Burleigh, G.I. Froebel H., Gt. Yarmouth
Burnett, F.M. City of Durham S. for Girls, Durham
Burnett, V.M. City of Durham S. for Girls, Durham
Burningham, H.J.F. Athelstan H., Cliftonville
Burrett, M.V.G. Princess Frederica S., Kensal Rise
Butcher, E.M. Quarry H., Guildford
Butler, D. Wm. Gibbs' S., Faversham
Butler, V.A. Lancefield S., Southend-on-Sea
Byrd, D.M. Dresden H., Evesham
Cadman, A.G. Hemdean H., Caversham
Camiot, S.A. La Frontiere, St. Mary's, Jersey
Camp, G.E. Kenilworth S., Ealing
Camroune, D. Heidelberg Coll., Ealing
Cannan, F. Wellesley Terrace S., Liverpool
Chabot, D. Stamford Hill and Clapton High S.
Chadwick, D.H. Norma S., Waterloo
Chambers, M. Chestnut H., Lincoln
Chandler, N.E. Alexandra Coll., Shirley
Chave, E. Private tuition
Cheek, M.P. Royal Masonic Inst. for Girls, S.W.
Cheer, G.E.M. Clevedon Lodge, Reading
Cheeseman, G.M. Abbey H., Selby
Chidgey, K.G. High S. for Girls, Wanstead
Christelow, W.A. St. Mary's Convent, York
Church, G.C. Ashby Coll., Brockley
Clamp, W.M.L. Leicester Rd. S., Melton Mowbray
Clark, B.M. Coborn S. for Girls, Bow, E.
Clark, I.L. Clark's College High S., Tufnell Pk., N.
Clarke, F.H. St. Helen's S., Streatham
Clay, G. Ivy H., Hanwell
Clayton, F. 3 Stainbeck Lane, Chapeltown
Cleverly, W Emwell S., Warminster
Clutten, A.E. Private tuition
Cosker, L. Fordeleigh Coll., Newton Abbot
Cockcroft, K.M. Camden S., Hull
Cockrem, C.M. Houndiscombe S., Plymouth
Cocks, C.M. Cornwallis High S., Hastings
Cohn, G. The Close, Brighton
Colbran, R. St. Helen's Coll., Seven Kings
Coldman, V.M. Waldron H., Havant
Cole, A.M.L. Harley H., Hereford
Cole, B. Ladies' Home S., Ealing
Cole, D.M. Dresden H., Evesham
Cole, L.B. Westbourne H., Cowes
Collen, E.C. Private tuition
Coilingridge, V.F. Highleigh H., St. John's, S.E.
Collings, G.M. Cambridge H., Millbrook
Collins, D.L. Forest Place S., Leytonstone
Collins, F.E Meadowcroft Coll., Aintree
Colsell, G.M. Coborn S. for Girls, Bow, E.
Colson, M. The Southend S., Winchester
Cook, E.G. Harley H., Hereford
Cook, K.G. Colville H., Eastbourne
Cooke, E. Pencraig Coll., Newport, Mon.
Coombes, E. Salisbury Road S., Plymouth
Coombs, N.M. Hope Lodge S., Bexley Heath
Cooper, I.M. St. Michael's Avenue S., Northampton
Cope, N.A. Dresden H., Evesham
Cordeux, E.G. Broadgate S., Nottingham
Cory, M. St James's Coll. S., Jersey
Coulthurst, M. Grimshaw Street British S., Preston
Covington, N.B. Athelstan H., Cliftonville
Cowan, W.E. Oakley High S., Southsea
Cox, D.E. High S. for Girls, Coventry
Cox, M. Ashley H., Worksop
Craig, J.E. London Coll., Stratford
Crawley, A. Coborn S. for Girls, Bow, E.
Crawshay, M.L. The College, Totnes
Creasy, D. St. Helen's S., Streatham
Crebbin, I.G. Coll. S., Muswell Hill, N.
Crees, R. Selwood S., Frome
Crofts, E. Selwood S., Frome
Crow, S.D. Mayfield Coll., Marlborough
Crow, Z.E. 16 Nicosia Rd., Wandsworth Common
Cunliffe, I. Grimshaw Street British S., Preston
Curry, M.A. Belle Vue H., Holbeach
Curtis, E.M. St. Julian's Coll., W. Norwood
Cutbush, R. High S. for Girls, Wanstead
Danks, D.L. Crouch End High S., N.
Darley, H. Manor Pk. High S., Forest Gate
Davies, E.N. St. Maur Coll., Chepstow
Davies, L. Harley H., Hereford
Davies, M. Girls' Coll, Penmaenmawr
Davies, R. St. Maur Coll., Chepstow
Davis, H.I. Grosvenor College, Bath
Davy, E.S. Coborn S. for Girls, Bow, E.
Dean, M. Westboro' High S., Newcastle-on-Tyne
DeCairos, E. Conv. of Loreto, Hulme
Dewhurst C. St. Catherine's Roman Catholic S., Sheffield
Dixon, A.E. The Manor H., Driffield
Dobbs, E. Duke Street S., Bath
Dobson, M. Great H., Cowbridge
Dolton, D. Rockvale H., Brixham
Double, E. St Winifred's S., Seaford
Druitt, E.M. Coborn S. for Girls, Bow, E.
Duff, O.R. Delgany S., Crown Hill
Duguid, K. Benalbyn, New Barnet
Dukes, R.K. Castle Hall S., Northampton
Dunn, E.M. Ebenezer H., Norwich
Dutton, E.M. High S., Whitchurch
Dyster, M.E. St. Helen's Coll., Seven Kings
Eade, C. Westboro' High S., Newcastle-on-Tyne
Eamer, I.M. St. Michael's Avenue S., Northampton
Earwaker, A.M. Gwyrfai, East Cowes
Easton, M. Haldon View, Exeter
Ebblewhite, D. Ashby Coll., Brockley
Edgar, M.H. Lynton H., Portsmouth
Edmonds, K.E. 5 Clapton Square, N.E.
Edwards, E.W. Grosvenor Coll., Bath
Edwards, G. St. Helen's S., Streatham
Edwards, N.E. Norma S., Waterloo
Elias, E.A. Summerfield Hall, Macsycwmmer
Ellender, M.A. Holt H., Fakenham
Elliott, E.P. Wilbet H., Biggleswade

GIRLS, LOWER FORMS—*Continued.*

Ellis, A.M. Riverside, Hayle
Ellis, G.P.D. New Road S., Brentwood
Enright, M.K.L.
Anglo-French S., Leicester Place, W.C.
Evans, E. GrimshawStreetBritishS., Preston
Evans, G.L.
New Brighton High S. for Girls
Evans, R.M. Private tuition
Evans, S. Great H., Cowbridge
Eve, E.V. Elm Lodge, Petersham
Eyles, M.H. Somerville H., Northampton
Fawdon, M.E. Haslemere, Clapham Pk., S.W.
Fawdon, V. Haslemere, Clapham Pk., S.W.
Faulkrew, L.M. Crouch End High S., N.
Fells, M. Addiscombe H., Margate
Fenwick, M.E. Chatwin H., Hurworth
Ferraro, A.M.
Anglo-French S., Leicester Place, W.C.
Ferris, D.M. Salisbury Road S., Plymouth
Field, G.F. The Limes, Buckhurst Hill
Field, G.A.M. The College, Southend-on-Sea
Fielder, M.D. British S., Wokingham
Filby, C.M. Holt H., Fakenham
Findon, E.J. Girls' High S., Bridgnorth
Fisher, E. Dresden H., Evesham
Fletcher, K. Springfield H., Stockport
Flood, R.A. Bishop Fox's High S., Taunton
Flower, H. Ashley H., Worksop
Ford, E.M. Hartington H., Beckenham
Ford, M.C. Collegiate S., Muswell Hill, N.
Ford, U.M. Bedford Ladies' College
Foster, B.A. Brooklyn High S., Leytonstone
Foster, D. Glengarry, Birkdale, Southport
Foster, M. Hill Croft, Hornsey, N.
Found, E.M. Westbourne H., Cowes
Francis, M.E.J. Darnley H., Gravesend
Fripp, M.L. Brentwood, Southport
Fullard, F.E. Welby Coll., Market Deeping
Gadsby, H.K. Girls' High S., Bridgnorth
Gange, M.K. High S. for Girls, Wanstead
Garbett, H. Brooklyn H., Wellington, Salop
Garlick, D.W.E.
Princess Frederica S., Kensal Rise
Garnett, E.R. Private tuition
Garratt, D.
Clark's Coll. Girls' S., Brixton Hill
Gartman, B. Brownswood Coll., Highbury
Gilford, M.N. Clough S., Reigate
Gill, L.F. Hanover H., Ryde
Gillard, E.W. Haldon View, Exeter
Glass, F.K. Mayfield Coll., Marlborough
Glass, P. The Close, Brighton
Godfrey, A. Wandsworth H., Heaton
Godfrey, B.M. Parnella H., Devizes
Godfrey, E.G. Salisbury H., Plymouth
Golby, E.C. 19 Ella Rd., Crouch Hill, N.
Goodman, A.E.
Bishop Fox's High S., Taunton
Gough, L.C. Girls' High S., Bridgnorth
Gran, D.M. Salisbury Road S., Plymouth
Grant, L.M. Salisbury Road S., Plymouth
Graves, F.M. Hanover H., Ryde
Graves, V. Hanover H., Ryde
Gray, M.W. Welby Coll., Market Deeping
Green, J.M. Eastfield S., Walthamstow
Greenland, E. Emwell S., Warminster
Greenwood, A.M. Weirfield S., Taunton
Greenwood, E.E. Lyndale Coll., Worthing
Griffin, E.V.G. St. Kilda's Coll. S., Bristol
Griffin, F.G. Atcombe House, Barry
Griffiths, A.M. Collegiate S., Handsworth
Griffiths, E.E. Kensington S., Bath
Griffiths, M.H. St. Maur Coll., Chepstow
Grimley, V. Kenilworth S., Ealing
Grinsell, D. Blenheim H., Olton
Grundy, I.M. Girls'S., SouthShore, Blackpool
Gunn, K.W.E. Pencraig Coll., Newport
Habgood, E. Marist Convent, Tottenham
Hackett, H.R.
Sullivan Coll., Bitterne Pk., Southampton
Haddock, A. Warwick H., Poulton-le-Fylde
Hails, E.C. Warwick H., Roade
Hamblett, K. St. Editha's S., Tamworth
Hamilton, E. White H., Wallsend-on-Tyne
Hanna, S. Woodward H., Sunderland
Hanneman, W.R. Ladies' Coll., Margate
Harcombe, K.G. Weirfield S., Taunton
Hardman, D.B. Heidelberg Coll., Ealing
Harman, W. Athelstan H., Cliftonville
Harold, G.D. Hope Lodge S., Bexley Heath
Harris, B.W. Private tuition
Harris, E.M.
31 Brigstock Rd., Thornton Heath
Harris, G.M Belvidere S., Birkdale
Harrison, E.E. Welby Coll., Market Deeping
Harrison, M.V Quarry H., Guildford
Hart, J.C. Addiscombe H., Margate
Hartley, M.C. St. George's H., Doncaster
Hartshorn, A.A.
St. John's Mid. Cl. Girls' S., Up. Holloway
Harvest, S.V.
Girls' S., South Shore, Blackpool
Harvey, A.M. High S., Thorpe
Harvey, E.M. High S., Thorpe
Harvey, H. St.Monica's Girls' S., Herne Bay
Harvey, M.E. High S., Thorpe
Harvey, M.L. Houndiscombe S., Plymouth
Hay E,.C.
Grimshaw Street British S., Preston
Hay, M.A. Queen's S., Margate
Hawgood, O. York H., Farnham
Hawker, G. Mountside High S., Hastings
Hawkes, D. St. Olave's, Taunton
Hawkes, E.R.C.
Melbourne H., Clapton Sq., N.E.
Hawkes, U.M. Highfield S., Croydon
Hazell, D.J. Drayton House Coll., Newport
Head, L.S.
Holmwood Coll., Westcliff-on-Sea
Henderson, H.F.E. Private tuition
Hennell, E.E. Dorchester H., Clacton-on-Sea
Hennings, C. Hartington H., Beckenham
Herault, E.M. 44 Val Plaisant, Jersey
Heyes, W.E. Claremont Coll., Liverpool
Hickman, M. Royal Deaf S., Old Trafford
Higginson, S.S. Meadowcroft Coll., Aintree
Higham, E.L. Eastfield S., Walthamstow
Hikins, M. Girtonville Coll., Aintree
Hilhouse, N.H.
11 Agamemnon Rd., W. Hampstead
Hill, A.M. Alexandra Coll., Shirley
Hirst, M.I. HolmwoodColl., Westcliff-on-Sea
Hitchman, I.C. Eastfield S., Walthamstow
Hobbs, B.M. Oakley High S., Southsea
Hocknell, P.M. Victoria H., Congleton
Holder, C.Y. Bronshill S., Torquay
Holdinott, K.E.E. Dresden H., Evesham
Hodgson, R. Norma S., Waterloo
Hogben, M.M. Alexandra Coll., Shirley
Holt, E.M. Grosvenor S., Wokingham
Hooker, D.M. Deerbrook S., Herne Hill
Hornby, W.M.
St. Michael's Avenue S., Northampton
Horton, E. Broadfield, Rochdale
Houghton, E.M. Private tuition
Houlden, E.G.
Royal Masonic Inst. for Girls, S.W.
House, D.A. Westbourne H., Cowes
Howard, F.A. Heidelberg Coll., Ealing
Howell, H.W.
W.Central Coll.S., Mecklenburgh Sq., W.C.
Howell, K. Pencraig Coll., Newport, Mon.
Hoy, F.S. Highleigh H., St. John's, S.E.
Hunt, M.J. Cromwell Rd. S., Bristol
Hunter, A.C. Clough S., Reigate
Hurry, F.D. London Coll., Stratford
Huxley-Roberts, E.
New Brighton High S. for Girls
Hyde, G.M. St. John's Coll., Brixton
Illingworth, F.W.
Hopton Congregational S., Mirfield
Ince, A.G. ForestPlaceSchool, Leytonstone
Ingmire, W.D. Addiscombe H., Margate
Jackman, K.
Franciscan Convent S., Clacton-on-Sea
James, C.J. PrincessFredericaS., KensalRise
James, D. Preparatory S., Byfield
James, E.A. PrincessFredericaS., KensalRise
James, E.M.
St. John's Mid. Cl. Girls' S., Up. Holloway
James-Davies, E. Eastfield S., Walthamstow
Jarvis, D. Bleak H., Brentwood
Jarvis, W.B.
Windycroft Coll., W. Hampstead, N.W.
Jeffreys, I. Fairhaven, Batheaston
Johnson, A. Highfield S., Harrogate
Johnson, G.E. Coborn S. for Girls, Bow, E.
Jones, F.A. Oldfield Park S., Bath
Jones, I.M. Wilber H., Biggleswade
Jones, M. Summertield Hall, Maesycwmmer
Jones, M.E.N.
Pemberton Coll., Upper Holloway, N.
Jones, M.J. Girls' Coll., Penmaenmawr
Jones, M.J. Bank House, Crediton
Jordan, B. Conv. of Loreto, Hulme
Joyce, N. High S., Whitchurch
Kautter, J. Private tuition
Keeling, E.M.G.
Girls' S., South Shore, Blackpool
Kemp, E.G. St. Kilda's Coll. S., Bristol
Kendall, O.M. Holt H., Fakenham
Kennett, O.
Royal Masonic Inst. for Girls, S.W.
Keys, J.E.
Clark's College High S., Tufnell Park
Keyzor, D.V. Mansfield H., Maida Vale
Kiernander, D.U.C. Benalbyn, New Barnet
Kilby, H.M. Somerville H., Northampton
King, I.R. Brentwood, Southport
Kirk, I.M. RoyalMasonicInst. for Girls, S.W.
Kneen, D. Warwick H., Poulton-le-Fylde
Knowles, H.M.G. Brentwood, Southport
Labey, L.J. Ashton H., St. Clement's, Jersey
Lagden, G.M. New Road S., Brentwood
Lake, P.W.F. Wilton H., Reading
Lane, D.A. Highfield S., Croydon
Lane, D.G. Brean Down H., Burnham, Som.
Langton, L.U.H. Private tuition
Laurence, D.H.
St. Michael's Avenue S., Northampton
Laverack, D. Abbey H., Selby
Law, J. Nantly H., Hounslow
Lawrence, H.J. Oldfield Park S., Bath
Leach, G. South Shore Coll., Blackpool
Lees, V. Ashley H., Worksop
Lefebvre, L.M. Weirfield S., Taunton
Lefever, E.M.
French Protestant S., Shaftesbury Avenue
Leghorn, E.H. Norma S., Waterloo
Lempriere, I.M.
Lancefield S., Southend-on-Sea
LeQuesne, R.M.
Glengarry, Birkdale, Southport
Letten, C.L. Cranbury High S., Southampton
Levett, J.G. Cornwallis High S., Hastings
Lewis, E. Emwell S., Warminster
Lewis, E.A. Lulworth H., Caerleon
Linay, E. Ashley H., Worksop
Linington, W.M.
Thorntonville S., Thornton Heath
Livingstone, D.G.
St. Michael's Avenue S., Northampton
Lloyd-Chandos, J.O. Nantly H., Hounslow
Loadman, F. St. Mary's Convent, York
Lobban, A.M. Clifton H., Highgate
Lock, K.A. Duke Street S., Bath
Lock, M. Mountside High S., Hastings
Lockier, E.M. Girtonville Coll., Aintree
Löffler, H. Marist Convent, Tottenham
Lord, E.M. Girls' S., South Shore, Blackpool
Lulman, N.D.
Clark's College High S., Tufnell Pk., N.
Lupton, D. High S. for Girls, Coventry
Mack, F.M. St. Winifred's, Southampton
Mackenzie, C.J.
Glengarry, Birkdale, Southport
Mackenzie, M. Stafford H., Clacton-on-Sea
Mackenzie, V. Coborn S. for Girls, Bow, E.
Mallinson, E. Powerscroft, S. Woodford
Mallinson, H.
Hopton Congregational S., Mirfield
Maltby, A.M. Hartington H., Beckenham
Manbey, M.A.M.
The College, Southend-on-Sea
Mann, H.F. Howard Coll., Bedford
Mann, M.A. North Kensington Coll. S., N.
Manning, F.M. Warwick H., Roade
Mansfield, D.E.
Melbourne H., Clapton Square, N.E.
Maple, M.C. Hopefield H., Norwich
Mapstone, B.L. Clough S., Reigate
Marett, H.M. AshtonH., St.Clement's, Jersey
Margerison, E.E. Tinwald H., Heswall
Margetts, D.E. SlienChiarnS., Northampton
Marriott, D.H.
Leicester Road S., Melton Mowbray
Marsh, L. Oakley High S., Southsea
Marsh, N. Eastfield S., Walthamstow
Martin, D.M. Ashby Coll., Brockley
Mason, V. Dinorwic High S., Birkdale
Massie, M. 11 Nicoll Rd., Willesden
Masterman, K. The Manor H., Driffield
Masterson, A. Conv. of Loreto, Hulme
Mather, A.L. Glengarry, Birkdale, Southport
Matson, L.C.
St. Michael's Avenue S., Northampton
Matthews, D.M. Westbourne H., Cowes
Mawer, I.C. Coborn S. for Girls, Bow, E.
May, D.A. Rhampore H., Wembley
May, K. Sherwood H., Woolwich Common
May, M.C. Rhampore H., Wembley
McCallum, M. Clarence H., Filey
McCarthy, V.
St. Nicholas S., Copperas Hill, Liverpool
McCormack, D. Woking High S.
McDermot, E. Girtonville Coll., Aintree
McDonald, M. Beecholme Coll., Belper
Mengens, W.E. Bronshill S., Torquay
Merrick, E.M. Old Bank H., Castle Cary
Metson, J.E. Coborn S. for Girls, Bow, E.
Middle, W.M. Guelph Coll., Bristol
Mills, K.E. Clifton Lodge S., Lee
Milne, C.E. White H., Wallsend-on-Tyne
Milne, M.E.G. Coborn S. for Girls, Bow, E.
Milner, P. Coborn S. for Girls, Bow, E.
Miners, I.F. Salisbury Road S., Plymouth
Mitchell, E.S. Girls' S., Brewood
Montel, J.A.
Anglo-French S., Leicester Place, W.C.
Moore, B.E. Private tuition
Moore, G.M. Froebel H., Gt. Yarmouth
Moore, E.M. Private tuition
Moorsom, I.M.C.
Saxenholme High S., Whalley Range
Morgan, J.E. Gelliwastad S., Pontypridd
Morris, E. Great H., Cowbridge
Morris, F.L. Ystrad H., Newport
Morse, C.E. Old Bank H., Castle Cary
Morton, S. Girtonville Coll., Aintree
Mothersole, L.E.C.
Coborn S. for Girls, Bow, E.
Mott, L.S. Hemdean H., Caversham
Munro, E.A. Holt H., Fakenham
Nagle, E.G. Nantly H., Hounslow
Naish, E.C. Alexandra Coll., Shirley
Napper, E.L. Duke Street S., Bath
Neale, N.M. St.Monica's Girls' S., Herne Bay
Needs, D. Holt H., Fakenham
Newman, B.M.
Clark's College High S., Tufnell Pk., N.
Newsome, E.M.
Hopton Congregational S., Mirfield
Neuth, E.M. Collegiate S., Brentford
Nicholas, D.M. Girls' High S., Bridgnorth
Nichols, F.G. Belvedere S., Birkdale
Nicolle, M.F.
Six Roads S., St. Lawrence, Jersey
Nixon, I.J. High S., Whitchurch
Noble, F.G.N. Private tuition
Nolan, E. Conv. of Loreto, Hulme
Norman, E. 31 Brigstock Rd., Thornton Heath
Norman, N.W. Hemdean H., Caversham
Norris, W.M. Ladies' Coll., Margate
Northmore, F.C.
Holmwood Coll., Westcliff-on-Sea
O'Connell, M.
St. Nicholas S., Copperas Hill, Liverpool
O'Connor, S.
St. Catherine's Roman CatholicS., Sheffield
Oppen, E.
16 Nicosia Rd., Wandsworth Common
Paramor, E. Ivy H., Hanwell
Parker, N. Breck Coll., Poulton-le-Fylde
Parker, R.C. Eastfield S., Walthamstow
Parr, M.M. Hopefield H., Norwich
Parry, N.M. Lancefield S., Southend-on-Sea
Parsons, A.M. Atcombe H., Barry
Pearce, H.E. Quarry H., Guildford
Pearce, L. Salisbury Rd. S., Plymouth
Pearson, E.C. Coborn S. for Girls, Bow, E.
Pearson, E.F. Westwing Coll., Ryde
Pierce, E. Dunrobin, Woolston
Penketh, G. Conv. of Loreto, Hulme
Penny, E.E. Beaconsfield, Weston-s.-Mare
Perks, L.A. Somerville H., Northampton
Perry, D.H. Stafford H., Clacton-on-Sea
Perry, L.E. Westbourne H., Cowes
Phillips, A.L. Girls' High S., Bridgnorth
Phillips, D. Private tuition
Phillips, D.H. High S., Prestwich
Pickering, A. Claremont Coll., Liverpool
Pickering, L. Claremont Coll., Liverpool
Pickup, B.K. St. George's H., Doncaster
Picton-Jones, E.
Glengarry, Birkdale, Southport
Picton-Jones, H.
Glengarry, Birkdale, Southport
Pinckard, W.M. Welby Coll., Market Deeping
Piper, I.M. Bourne H., Eastbourne
Platt, W.M. Glengarry, Birkdale, Southport
Polwhele, M.E. Private tuition
Pomeroy, F.M. Camden S., Hull
Porteous, E.M. Ellerker Coll., Richmond
Porter, D.L. Essex H., Saltash
Pownall, C.M.M. Private tuition
Pownall, E.W. Private tuition
Preston, M.B. Essex H., Saltash
Pridham, E.M. BishopFox'sHighS., Taunton
Prince, A.O. Longford Girls' S., Bristol
Pritchard, E.M. Lulworth H., Caerleon
Pritchard, G.
31 Brigstock Rd., Thornton Heath
Pugh, M. Collegiate S., Muswell Hill, N.
Purdy, E. Girls' S., South Shore, Blackpool
Purnell, V.G. Westwing Coll., Ryde
Pyne, M.A. St. Olave's, Taunton
Rainbow, M.F. Clifton H., Highgate
Rainbow, M.K. Clifton H., Highgate
Ralph, M.C. British S., Wokingham
Raw, M.
City of Durham S. for Girls, Durham
Readhead, W. Woodward H., Sunderland
Reed, D. Pencraig Coll., Newport
Reeves, A. High S. for Girls, Staines
Reis, G.M. Ladies' Coll., Margate
Rennett, A.
Royal Masonic Inst. for Girls, S.W.
Reynolds, M.S. Slien ChiarnS., Northampton
Richards, A.C.B. Private tuition
Richards, M.G. Dresden H., Evesham
Richardson, M.E.
The College, Southend-on-Sea
Riddle, A.M.
Thorntonville S., Thornton Heath
Rigby, W. Conv. of Loreto, Hulme
Rimmer, G. Norma S., Waterloo
Rippin, E.
Stamford Hill and Clapton High S.
Roberts, W.M. Lulworth H., Caerleon
Robinson, E.F.
Cumberland H., Bonverie Rd., N.
Robinson, G. Hill Croft, Hornsey, N.
Robson, G. Meadowcroft Coll., Aintree
Roby, A. Stamford Hill and Clapton High S.
Rosenthall, D.F.L.
19 Ella Road, Crouch Hill, N.
Ross, M.A. Fairhaven, Batheaston
Ross, M.C. Salisbury H., Plymouth
Routley, H.
31 Brigstock Road, Thornton Heath
Rowe, A.J. The College, Totnes
Royle, M.G. St. Helen's Coll., Seven Kings
Rucklidge, D.R. Private tuition
Ruddock, W.H. Grosvenor Coll., Bath
Runeckles, E.G. Eastfield S., Walthamstow
Russell, A.J. Coborn S. for Girls, Bow, E.
Russell, I.G. Ellerker Coll., Richmond
Ryder, G.E. Girls' High S., Bridgnorth
Ryman, E.L. Coborn S. for Girls, Bow, E.
Rynd, C. Heidelberg Coll., Ealing
Sabine, M. Rose Park S., Upper Tooting
Sainty, M.J.M. High S. for Girls, Coventry
Salter, G.L. Holt H., Fakenham
Sanders, E. Lee College, Eastbourne
Sanders, L.M.M.
Westcliffe Coll., Southend-on-Sea
Sanderson, M.J. Girls' Coll., Penmaenmawr
Sargent, S.M. Verecroft, Devizes
Sarkies, F.M.A.
Khamaria H., Hampstead, N.W.
Saunders, L.P. Ladies' Coll., Margate
Savage, D.C. Bleak H., Brentwood
Scholfield, H. High S., Prestwich
Schwanzer, E. Marist Convent, Tottenham
Scott, E. 31 Brigstock Road, Thornton Heath
Scott, G.F. Grosvenor Coll., Bath
Scott, M.H.S. Athelstan H., Cliftonville
Scrymgour, H.
St. Monica's Girls' S., Herne Bay
Seabrooke, W.E. The Limes, Buckhurst Hill
Searle, M.A. Cranfnant S., Buckhurst Hill
Secker, D.M.
Royal Masonic Inst. for Girls, S.W.
Seex, C.M. Anglo-French Girls' S., Bristol
Segers, O.E. Girls' High S., Sudbury

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GIRLS, LOWER FORMS—*Continued.*

Seymour, G.F.
Stamford Hill & Clapton High S.
Shackell, M.A. Grosvenor Coll., Bath
Sharpe, M.S. Parkside, Harrogate
Shed, M.M. Private tuition
Shepherd, K. Salisbury Rd. S., Plymouth
Shotton, D. Fairhaven, Batheaston
Simmonds, A.C. Darnley H., Gravesend
Simmonds, D.M.
Penrith High S., Stamford Hill, N.
Simmonds, M.J.
Penrith High S., Stamford Hill, N.
Simmons, F.M.
Penrith High S., Stamford Hill, N.
Simpson, G. Cromwell Rd. S., Bristol
Simpson, M.E. Crescent Coll., York
Simpson, N. Girls' High S., Bridgnorth
Sims, A. Trevello H., Winton
Slarks, D.M. Private tuition
Slatter, W.A. Crouch End High S., N.
Smart, E.L. Parnella H., Devizes
Smith, C.H. The Manor H., Driffield
Smith, D.M.
Holmwood Coll., Westcliff-on-Sea
Smith, E. Hemdean H., Caversham
Smith, E.M. Coborn S. for Girls, Bow, E.
Smith, L.C.
Holmwood Coll., Westcliff-on-Sea
Smith, L.F. Hemdean H., Caversham
Smith, L.M. Wellington S., Deal
Smith, O. The Southend S., Winchester
Smith, S.A.
St. Michael's Avenue S., Northampton
Smyth, L.A.H.
Bestreben High S, Brondesbury
Snell, E. Lyndale Coll., Worthing
Sowerbutts, E.M. Springfield S., Stockport
Sowerbutts, M.
Grimshaw Street British S., Preston
Sparrow, R.M. Hopefield H., Norwich
Spencer, E.M. The College, Swanwick
Spooner, E.J.
Cleveland H., Lower Clapton, N.E.
Sprigings, E. Gavine H., Portsmouth
Springford, A. Parnella H., Devizes
Spry, I. The College, Totnes
Staig, A.A. White H., Wallsend-on-Tyne
Stamp, F.M. Hartington H., Beckenham
Steel, F.E.
Hopton Congregational S., Mirfield
Stephens, C.R. St. Maur Coll., Chepstow
Stevens, E.E. Fordeleigh Coll., Newton Abbot
Stevens, V. Cumberland H., Bruverie Rd., N.
Stevenson, E. Ashley H., Worksop
Stewart, E.M. Lynton H, Portsmouth
Stokes, I.J. Haldon View, Exeter
Stone, E. Broadgate S., Nottingham
Stone, M.P. Ladies' Coll., Margate
Stonestreet, M. Private tuition
Storey, C.W. Home S., Heighington
Stott, B.L. Girtonville Coll., Aintree
Stringer, M.P. The Limes, Buckhurst Hill
Stromqnest, S.K.L. Ladies' Coll., Margate
Such, V.G. Private tuition
Sutcliffe, D.V.
Clark's College High S., Tufnell Pk., N.
Sutherland, J.G. Gelliwastad S., Pontypridd
Swann, E.E.
Grimshaw Street British S., Preston
Symons, A.D. High S., Thorpe
Talbot, N.J. Wellington S., Deal
Tankard, L. Norma S., Waterloo
Tanner, H.P. Private tuition
Tate, A.M.
City of Durham S. for Girls, Durham
Tatham, L.G. Ladies' Coll., Margate
Taylor, A. Wisteria S., Uckfield
Taylor, D. Breck Coll., Poulton-le-Fylde
Taylor, E. St. George's H., Doncaster
Taylor, E.
Hopton Congregational S., Mirfield
Taylor, R.C. Quarry H., Guildford
Terry, K.M. Private tuition
Teverson, B. Coborn S. for Girls, Bow, E.
Thatcher, B.W.N.
Coborn S. for Girls, Bow, E.
Thomas, A.C.M. St. Helen's S., Streatham
Thomas, D.K.
Holmwood Coll., Westcliff-on-Sea
Thomas, L.
Summerfield Hall, Maesycwmmer
Thompson, D. Crafnant S., Buckhurst Hill
Thompson, M.S. Brentwood, Southport
Thomson, K.McC. Home S., Bristol
Thomson, M.M. Hartington H., Beckenham
Thoubboron, C.E.
Melbourne H., Clapton Square, N.E.
Tillott, K.M. High S., Attleborough
Tipler, A.F. Castle Hall S., Northampton
Todd, M.A. Girls' Coll., Penmaenmawr
Tolfree, M.B. Alexandra Coll., Shirley
Torrens, M.M.L. Kensington H., Chiswick
Trace, M. High S., Teignmouth
Trahern, E.W. High S. for Girls, Coventry
Tuck, H.G. Lynton H, Portsmouth
Underwood, E. Ladies' Coll., Margate
Upham, W.O. Rockvale H., Brixham
Uridge, M. Highleigh H., St. John's, S.E.
Venn, M. High S. for Girls, Coventry
Verity, L. New Brighton High S. for Girls
Volden, D.M. Salisbury Road S., Plymouth
Wacher, H.D.
St. Monica's Girls' S., Herne Bay
Waddington, E. Hartfell, Birkdale
Wade, E.M. Alexandra Coll., Shirley
Wadhams, E.M.
St. Michael's Avenue S., Northampton
Wain, C. Ivy H., Hanwell
Wainwright, E.D. Coborn S. for Girls, Bow, E.
Walker, C.N. Woodside, Hastings
Walley, N.M. High S., Whitchurch
Wallis, E.A. Alexandra Coll., Shirley
Walters, E. Girtonville Coll., Aintree
Walton, E. Colville H., Eastbourne
Ward, H G. Welby Coll., Market Deeping
Ward, W.
Clark's College High S., Tufnell Pk., N.
Warman, E. Westcliffe Coll., Southend
Warrick, M.A. Hemdean H., Caversham
Watkiss, U.J. High S., Oakengates
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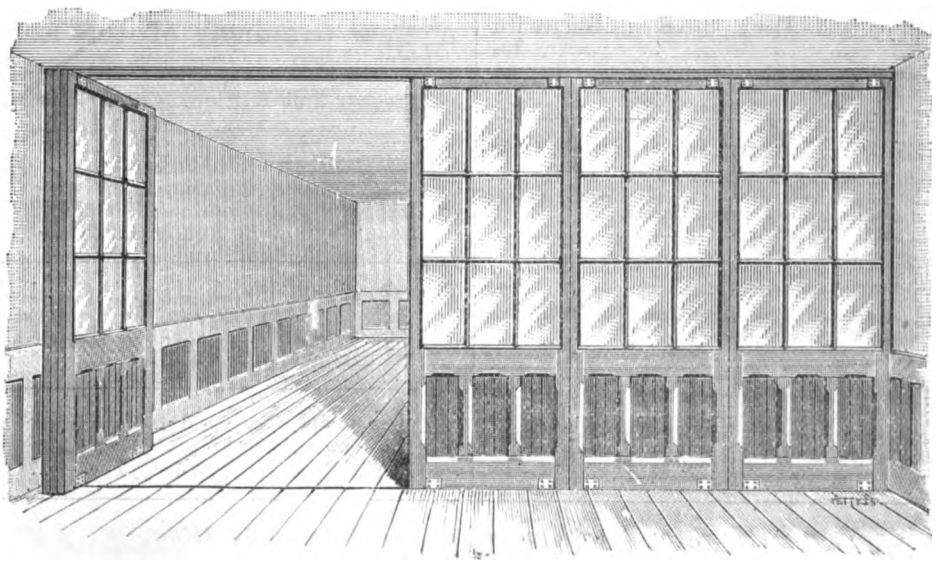

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The Educational Times.

London Education.

On the 1st of May the Education Act (London), 1903, will come into operation, and there is no indication of any wish on the part of Londoners to postpone the date. On the 5th of this month the elections will be held which determine into whose hands the administration of the new Act shall be committed, and to judge from the addresses of candidates now before us there is little doubt that the present election will turn mainly on education.

With Progressives or anti-Progressives, Anglicans or Passive Resisters, we are not concerned, but while standing aside from the party fray we may take the opportunity of discussing the Act simply from an educationist's point of view: without approving or disapproving it we may indicate what are its possibilities and how it may be turned to the best account.

As to the possibilities we cannot do better than refer our readers to a recently published volume on "London Education" by Mr. Sidney Webb (Longmans). Mr. Webb is an enthusiast, a dreamer of dreams, and his picture of London as it might be may seem to some to be modelled rather on Sir Walter Besant's "Palace of Delight" than on an Act of Parliament. But Mr. Webb is likewise a practical administrator, and there is nothing in his Utopia that might not even in this generation be realized if only Londoners were once convinced that the provision of education in all its grades concerns them no less than the supply of gas and water.

The first point to be noticed is that the London County Council as the Local Authority will take all education for its province. We may think that the London School Board might have been reconstructed and modified so as to fulfil these superadded functions, or we may think that an *ad hoc* body should have been constituted for the purpose; but we shall all agree on the vast possibilities that are opened out by the enlarged sphere. There is no more danger of Cockerton judgments, of starved and stinted voluntary schools (London will not be inclined to follow the policy of Wales), of conflicting interests and cross purposes between School Board teachers and the Technical Education Board.

But we may pay too dearly for centralization, and the most serious opposition to the London Act has come from those who have doubted whether the London County Council, with its present numbers, can efficiently undertake so vast a task in addition to all its present duties. It is reassuring to find that so competent an authority as Mr. Webb has no hesitation as to its ability. *Le mot de l'énigme* is devolution of authority. With the particulars of Mr. Webb's scheme for the formation of Local Education Committees in each of the twenty-nine boroughs, with Committees of Managers under them, we are not now concerned. It would be easy to pick holes in it, but we may unreservedly adopt the underlying principle as sound —that the main business of the Central Authority should be the supply and co-ordination of elementary and higher education, while the work of administration (under their direction and control) should be left to the local bodies.

With elementary education the problem is comparatively simple. The County Council will have ready to its hand machinery in perfect working order, and the inclusion of some thousand denominational schools, if at first it increases the work, will in the end, by removing friction and overlapping, reduce expenditure and increase the output. As to the supposed religious difficulty we would again ask our readers to consult Mr. Webb. In his final chapter he shows conclusively that the grievances of Nonconformists (with which he partly sympathizes) are lessened rather than aggravated by the Act; that financially the London ratepayer will actually benefit by the transference of voluntary schools; and, lastly, that as a mere matter of policy the opponents of concurrent endowment had far better bide their time and give the Act a fair trial.

But it is in relation to secondary education that the Act is a new departure, and here we cannot without reserve accept Mr. Webb as a safe guide. To start with, he apparently accepts the present condition of London secondary schools as satisfactory: "The department of secondary education is not one which will give the London County Council any serious trouble." Again: "London has to-day certainly not less than twenty-five thousand boys and girls between seven and nineteen in its secondary schools, actually a larger number than either Paris or Berlin." If we add the necessary qualification, "whereas it ought in proportion to its population to have twice or thrice the number," the statement

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will bear a very different complexion. One of the most perplexing factors of the new problem that faces us is the relation of the County Council to private schools. On this topic Mr. Webb's remarks are not illuminating, and somewhat supercilious. There are, he tells us, in the background, over and above the public schools, in varying quality, the private "commercial academies" and "colleges for young ladies" of the genteel suburbs. "To them is left the opportunity of justifying their existence by catering for special needs and supplying a desirable elasticity to the rigidity of any public system." And that is all the comfort and counsel that Mr. Webb has to give to the private teacher! What would the bakers say if they were told: "The State has determined to set up bakeries where the public can be sure of obtaining wholesome bread at half the cost price; you can still justify your existence by providing fancy breads for those who like such delicacies"?

One point that we have often urged before, but it cannot be too often repeated, is that before any thorough and lasting organization of secondary education can be initiated there must be a preliminary survey and census. At present any calculation of the number of secondary-school teachers and scholars in London is pure guesswork. In the instructive chart produced a year or two ago by the Incorporated Association of Head Masters there are big blanks corresponding to the elephants in old maps of Africa. Doubtless these are partly occupied by efficient private schools which could not be brought under Mr. Webb's category of "fancy articles"; but, if this is so, we contend that they must be taken into account by the County Council, not left to fight their own battle against superior odds, but rather recognized, supported, and, if necessary—with proper guarantees for efficiency—subsidized.

We hope in a future number to deal with London University Education, the subject of the most original and stimulating chapter in Mr. Webb's volume, and far too large to be despatched at the fag end of an article.

NOTES.

Prof. Sanday has felt and obeyed a "call" to put in "a word for peace" in present educational troubles, for he "has no dearer wish at his heart than to see English Christians working together harmoniously." In a pamphlet entitled "Justice in Education" (1s. net, Longmans) he states the case for the Church of England, sets forth what he thinks was in the minds of the framers of the Education Acts, and considers the scheme proposed by the Committee of the Free Church Council and the "Durham Concordat." Prof. Sanday lays special stress on "a very serious fallacy underlying a great portion of the arguments against the Education Acts": "the statement that the schools which have hitherto been denominational and supported in part by voluntary subscriptions are now henceforth 'maintained by the State.'" "They are not wholly, but only partially, so maintained." He cannot surrender the right of appointing head teachers; and yet he confesses that there is "an anomaly" here. He concludes with the hope that he has shown "that, even under the Acts as they are, the grievances of Nonconformists are not quite so great as some of them suppose, and that the part played by the Church has been neither so grasping nor so harmful as they have allowed themselves to believe"; and he submits "that the best course is to work the Acts honestly on the lines on which they were framed." It may be doubted, unfortunately, whether Prof. Sanday will carry conviction to the minds of his opponents.

Prof. Sadler, writing to our vigorous contemporary *Indian Education* (February), refers to Sir John Gorst's old declaration that "there exists in England a large proportion of the community which does not believe in the wisdom of the policy of educating the children of the country beyond a very elementary stage," and he indicates "the graver reasons" that explain such disbelief. He goes on, however, to say:

> But, at the most, they do not explain a fiftieth part of the inertia which still impedes educational progress in England. By far the most serious obstacles to educational improvements are class-selfishness, distrust of popular government, lack of imagination, the spirit of routine, ignorance of what education can do for a country and of what it is actually doing elsewhere, niggardliness, the desire to protect institutions which might be endangered by a great development of popular schools under public management, and the fear lest any serious growth of educational expenditure should leave too narrow a margin of the public income for the needs of the Army and Navy and other public services.

Prof. Sadler, however, expresses his conviction "that, cost what they may, measures for the improvement and great extension of educational opportunities have become vital to our national welfare." He wants a vigorous propaganda through the length and breadth of the country to impress this view. "There should be no resting until national education is as popular as the Royal Navy. And throughout the whole of our educational system, from top to bottom, there should be a strong current of national feeling and patriotic duty. All great educational revivals have been inspired by national enthusiasm."

Principal Faunthorpe, writing to the *Times* (January 25) on the Government Certificate, urged the Board of Education to "put down its foot and keep it there, complaints or no complaints, draw up its own syllabus, and insist upon it," adding that "thus the quality of the teachers will be commensurate to the money spent on their training." To Principal Griffiths, of Cardiff, such an appeal appears "a most discouraging incident"—a harking back to the "system which was considered adequate when there were no day training schools, when there were no University colleges, and when education as a science may be considered to have been non-existent." The Principal writes (*Times*, February 4):

> I would venture to suggest that the Board of Education should recognize the undoubted fact that regulations suitable for residential are not necessarily the best for the day training departments of University colleges. It might be possible to frame two distinct schemes, one applicable to those day training colleges which undertake to admit only matriculated students; the other to residential colleges. The former might be allowed the greater freedom. So long as the Board of Education insist upon a certain minimum standard, any resultant variety would be a good rather than an evil, and those colleges which preferred uniformity to variety, and control to liberty, might be placed within the bounds of the narrower scheme.

The increasing freedom of the past half generation should not be lightly checked or curtailed.

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Mr. A. W. Pickard-Cambridge's examination of "The Claims of Classical Studies," in the *Independent Review* for February, will probably suffer attack from different points. He might well have taken for granted the educational value of classical studies, and devoted more attention to "the further question whether, under the systems at present in vogue, our public-school and University men are really put in the way of obtaining any such benefits as those which the study of the classics is capable of conferring," and on the yet further question how to make the most of classics in the special circumstances. The conclusion is:

The study of the classics has advantages which make it perhaps the best basis for the liberal education not only of the ablest scholars, but of all who have not a marked special bent in some other direction. But at present these advantages are being obscured and lost by the inefficiency of the teaching and learning of the subject in schools; by the defects of a number of examinations and courses of work; and by the lack of intellectual interest in schools and Universities, and in the country as a whole. Further, the study of the classics, even if thoroughly pursued in all its branches, will not alone make a man into an educated citizen of an imperial democracy in an age of rapid progress in scientific thought and on every side of life. . . . But, whatever means are adopted, if the classics are to be retained as the substratum of a liberal education, there must be a constantly fresh effort to adapt the study of them to the development of intelligence; a vast improvement in school teaching; a readiness to modify stereotyped methods, and to impart life and freshness to work which is always in danger of becoming hackneyed and stagnant; and a discarding of the study of all that is not of high and universal value in ancient civilization and literature, in order to make room for training in matters of greater moment to modern men.

The *School Journal* (New York, Chicago, and Boston) asks the rather fundamental question: "Must teachers live?" "Well, doctors must live, you know," said the physician to Sydney Smith. "I do not see the necessity," was the genial reply. The State cannot get on without teachers, and so teachers must live. But how? For some years the question of salaries has been agitated by various committees of State teachers' associations, trying "to draw the American people out of a similar indifference" to Sydney Smith's. Now Mr. A. H. Sage, of the Wisconsin State Normal School at Oshkosh, assisted by a committee, finds that 376 dols. a year for men, and 248 dols. a year for women, is the average income of country-school teachers in the State. "This," says the *School Journal*, "is not only less than that of other brain-workers, but is less than that of dirt-shovellers and of every kind of unskilled workmen in the State." These Wisconsin teachers "have charge of over 50 per cent. of the children of the State." Again, Mr. William McAndrew, Principal of the Girls' Technical High School, New York, says: "The average salary of men teachers in the United States is less than 322 dols. a year, and the average pay of women is less than 200 dols. a year"; and consequently "the American public does not encourage, and does not permit, a teacher to acquire respectable ability and skill." "That average of 270 dols. a year" he frankly calls "that standing disgrace to the richest country of the world." Superintendent W. E. Chancellor, Bloomfield, N.J., discusses the matter in the *School Journal's* columns for "the Professional and Financial Side" (which, by the way, are edited by Mr. McAndrew), and proposes a more comfortable scale (January 2): for principals of elementary schools, maximum 10,000 dols., minimum 5,000 dols.; for teachers in elementary schools, maximum 5,000 dols., minimum 1,600 dols. What will the National Association's Committee report? What says the Mosely Commission?

Mr. Mosely himself gives his opinion, crisp and emphatic, in the February number of the *World's Work*. "The most striking facts I have gathered," he says, are these:—

(1) That the people of the United States spend a marvellous amount of money on their public schools, endowing education more lavishly than any other people in the world. (2) They do not spend enough. The salaries to teachers are not sufficient for the service the country desires and should have.

The money lavished on the schools goes to buildings and equipment, which "are on a much more generous scale than in England," but the teachers—the living force of the schools—are kept short. Mr. Mosely's "severest criticism of the American school system would be that the teaching force lacks men." Of course,

The trouble lies in the salaries. In many cases the actual money pay of teachers is higher in the United States than in England; but, reckoning the difference in the standard of living, especially in those articles that are above necessities, both men and women are paid more here than there.

"England," says Mr. Mosely, "might well learn lessons from the way in which the United States has worked out its educational problem." Undoubtedly. But American teaching is not yet perfect; it fails, if anywhere, "in the matter of inculcating the power of correct and accurate English speech." Still, Mr. Mosely's opinion is forcibly summarized in two lines: "I have placed my two sons in the Hopkins Grammar School at New Haven to prepare for Yale."

But what is this that comes from Columbia? Prof. Woodberry, the head of the Department of Comparative Literature, has resigned his post, and Prof. Macdowell, the head of the Department of Fine Arts, has struck in sympathy. And why? Because, according to Prof. Macdowell, "of the thousands of students that graduate at Columbia many are the merest 'barbarians.'" Here are our young barbarians all at play! They have no idea of art, they know nothing of painting, they cannot appreciate music, their intellectual energy is entirely of the material and commercial kind; and so Prof. Macdowell finds all his efforts to work are frustrated. Evidently there are American professors that take a solid and serious view of their business. But are they not somewhat impatient? Do they not exist officially just for the purpose of civilizing the "barbarians"? It is very well, no doubt, to "call public attention to the grave state of affairs affecting the artistic development of America"; but even Rome was not built in a day. We have not yet heard of any professorial resignations on this ground in any of the British Universities. Is it because we are before or behind America?

The two questions of "national physique" and an "ideal Army"—both undergoing public investigation at the moment—are admittedly of the highest importance. We cannot but think, however, that Dr. Arthur H. Rideal takes an unfortunate course in treating them together so closely as he does in his article in the *Army and Navy Gazette* (February 13, now reprinted). He submits a scheme of national

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physical regeneration "based upon the physical culture, drill, and training of our boys under the control of the Army Department." He says:

From a given date, every boy who has attained the age of twelve (or thirteen) years—unless physically unfit or destined for the Navy—should be compelled to commence a five years' course of drill and instruction calculated to fit him for a place in the ranks of the Army.

Dr. Rideal suggests an attendance of two or three hours a week as "ample to turn out efficiently trained young men." There are 425,000 boys between twelve and thirteen. Deduct 40 per cent. of physically unfit, and we have still 250,000. "In eight years," then, "we should have over a million well trained young men . . . sufficiently trained to at once take up arms in defence of the Empire. . . ." Yes, but "the martial spirit engendered by this youthful training"—we should say not "engendered" by any means, but fostered—might be turned so readily to other purposes than "the defence of the Empire." The Army would profit, no doubt; but it is for the policy of statesmen to protect us against military expenditure. Really our young men are wanted for civil life, and their physique ought to be capable of maintenance without military control and without reference to possible drafting into warfare.

We are glad to observe that a strong English Committee has been formed to engage English interest in the International Congress on Hygiene fixed for April 4 to 9 at Nuremberg. The Committee say very truly:

Speaking generally, English practice is behind the indications of present-day knowledge, and it will be invaluable to the Educational Authorities of Great Britain to have at their disposal the help derived from the experience of other countries, especially in relation to school buildings, ventilation, the efficiency of the various educational methods followed, the necessity of special schools for different types of education, the importance of good physical conditions, the avoidance of fatigue and the causes of neurasthenia and ill-health.

At the same time, in point of fact, we have no need whatever to go abroad for information and guidance on any of these matters; only the Congress will help to stir up public and official opinion, and get us forward from knowledge to practice. In the list of general addresses as yet published we find no Englishman; this omission, however, will no doubt be rectified. We observe, too, that ophthalmology is to the front, as it is in the London schools; but we should hope that at least equal attention will be given to ears and throats and noses—a point that needs urging in London as well as at Nuremberg. We hope that England will be amply and ably represented, especially in view of the anticipation that the next Congress will be held in London some three years hence.

Mr. H. C. Wyld, of Liverpool University, has been appointed by the Scotch Education Department to teach the pronunciation of English to Scotch schoolmasters. There must be plenty of money in the Department's chest, plenty of hopefulness in the Department's breast, and plenty of courage in Mr. Wyld's nerves. Is there a county in England that does not similarly require instruction? This is probably the final step in the anglicization of the "auld kingdom." The invasion is complete and triumphant. So there, at last, is "an end of an auld sang."

SUMMARY OF THE MONTH.

The Chancellor of the Exchequer, accompanied by Sir William Anson, received a deputation from the University colleges on the question of increased aid from the Treasury (February 17). Among the speakers were Principal Sir Oliver Lodge, Principal Hopkinson, the Right Hon. A. Acland, Sir John Brunner, and others. The Chancellor said he was prepared to ask Parliament to double the grant for the present year, and he hoped that it might be possible to increase the total to £100,000 next year. No grant would be given from this source in respect of any work which was not of University standard and quality.

At a recent conference of Church of England clergymen, the Rev. Dr. Fry in the chair, the following memorial was drawn up and signed (some of the signatories omitting the words "in school hours" in paragraph 5):—

We desire to express as our united conviction: (1) That the Education Acts should be impartially administered. (2) That it is expedient to amend the clauses of the Acts which deal with school management and religious instruction. (3) That such amendment should be carried out on the principle of religious equality, and should put all forms of religious teaching, including what is known as "undenominationalism," on an equal footing. (4) That in the interests of educational efficiency all schools supported by public money should be under full public control in all secular matters, including the appointment of teachers. (5) That, in view of the recognized importance of religious instruction, the State should provide facilities for the giving of such instruction in all schools, in school hours, under the following conditions:—(*a*) The instruction to be given by persons approved by the various religious bodies (*e.*, Anglican, Roman, Free Church, or Jewish), singly, or in combination with one another; (*b*) no part of the expense incurred to be paid out of public funds; (*c*) the parents of the child to decide which form of religious teaching he is to receive.

Mr. Sidney Webb, in his new volume (*London Education*, Longmans), sets out the educational work before the London County Council on May Day thus:

The new Education Authority for London is called upon to endow London with a complete educational system. To give to each of London's eight hundred thousand children during the years of compulsory school attendance the most effective physical, moral, and intellectual training; to develop in them the utmost mental acquisitiveness; to arouse in as many as possible of them the indefinable quality that we call resourcefulness, initiative, inventiveness, or the capacity for meeting new conditions by new devices; to provide for the whole of them the widest possible opportunities for continuing their studies after leaving the day school; to carry on, by a "capacity-catching" scholarship system, all whose brains make it profitable for the community to equip them with more advanced instruction; to organize, as well for these scholarship holders as for all others able to benefit by it, an efficient and duly varied system of secondary and University education, whether predominantly literary, scientific, artistic, commercial, technological, or professional in type; to provide the best possible training for teachers of every kind and grade; and so to organize the whole machine as, while increasing knowledge and efficiency, to promote everywhere the development of character and culture, and ultimately to encourage the highest scholarship and the most advanced research—all this, and nothing less than this, is the duty which Parliament has committed to the London County Council.

Mr. Webb would group the subjects at particular colleges—Science at University College, Engineering at the Central Technical College, Economics at the London School of Economics, Languages as well as Theology at King's College. He wants a million of money at once for building, and £150,000 a year.

The Bishop of Liverpool (Dr. Chavasse), speaking at the annual distribution of scholarships and awards gained by scholars under the scheme of the Liverpool Council of Education (February 8), said:

The dignity of the teacher's office was evident at once when they remembered the main object and goal of education. That object was not to cram with knowledge, not to train for a particular trade or profession, not to ensure the supremacy of British commerce or of British industry, but to teach their children how to live; to train the whole of a child for the whole of life; to turn out in the first instance not craftsmen or professional men, but men and women who, after all, made a nation, and to rear citizens for the kingdom of God. The qualifications for a good teacher might be summed up in a sentence—gifts, training, experience. The four gifts which went to form the good teacher in every age and in every country were knowledge, aptness to teach, sympathy, and reverence. It was an old fallacy which died hard that a very little knowledge was sufficient for a teacher. And, in regard to the second qualification, stores

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of knowledge were absolutely useless to a teacher unless he knew how to impart knowledge to others. This gift must be more or less natural. A good teacher, like a poet, was born, and not made. But training and experience could develop and strengthen in a remarkable degree this gift when it was not naturally great, and the greatest gift without training and experience could seldom do itself full justice. As to how that training and experience were to be obtained, he suggested—(1) that, excellent as was the present proposal that all future teachers should be trained in secondary schools, it would be a mistake if the majority were not early taught to teach in an elementary school. He did not say for the half-day, but certainly for a definite time every week. (2) It was most desirable that, in the second stage of their training, they should enjoy the advantages of a University life with its freer air, its wider horizon, and its more stimulating studies, where they would mingle with others who were not to be teachers like themselves, and by contact with a larger world run less danger of becoming narrow, mechanical, and purely professional. (3) In the case of those who were peculiarly able to profit, it would, in his opinion, be wise to send them to our ancient Universities, whose place the modern Universities, most needed and useful as they were, could never hope to fill. . . . The third and crowning qualification was sympathy. He who had no fellow-feeling with a child could never train a child's character. Between him and his pupils a great gulf was fixed. Sympathy was the spring of a teacher's influence.

A CONFERENCE of representatives of over a hundred Education Authorities was held in London (February 10) to consider the present difficulty of obtaining a satisfactory supply of assistant and pupil teachers. This difficulty, in the opinion of the Chairman (Councillor Tudor Walters, Leicester), is due to the sudden need for bringing the teaching staff in provided schools up to the level of the old Board schools. Resolutions were adopted urging the Board of Education to make it incumbent upon Education Committees to train pupil-teachers and assistant teachers in numbers proportionate to the average attendance in their schools, and to continue the old system for two years longer so that it might run side by side with the initial efforts of the various Local Authorities under the new system. It was decided to constitute an "Association of Education Authorities," and a representative Committee was appointed to report to a future conference.

THE report of the Oxford University Extension Delegacy for 1903 states that the year just ended marks the highest point attained by the work since its inception: 1,886 lectures, distributed in 199 courses, were delivered in 149 centres by 36 lecturers, and the number of students in regular attendance was 21,485. The Delegates observe with much satisfaction the increased recognition given to their work (and to the parallel work of other Universities) by the Board of Education. The regulations of the Board of Education for the current year announce that, for the first time, the examination for the Vice-Chancellor's Certificate issued by the Delegacy is recognized as an alternative to the *whole* King's Scholarship Examination. The Delegates are, however, of opinion that elementary teachers would, as a rule, derive greater advantage from University Extension teaching at a later stage in their training, and that the Extension system may be most usefully adapted to the needs of students in training colleges. It has long been felt that one formidable obstacle to the development of the work of the Delegacy was the lack of a sound system of secondary education. Another was the preferential treatment accorded, under the Acts of 1889 and 1890, to scientific and technical subjects. Both these obstacles may be removed by the Education Act of 1902. Meanwhile, the immediate effect of the Act has been in some degree to disorganize University Extension work. Some centres which have depended in part upon the financial support of Technical Committees report that they have had to suspend operations in consequence of confusion caused by the transference of local control to the new Authorities; others which have worked in connexion with School Boards are in similar uncertainty as to the immediate future. The Cambridge Syndicate are arranging a summer meeting for August.

THE candidates entered for the Cambridge Local Examinations last December numbered 15,317, exclusive of 1,630 candidates examined at colonial centres. In the Senior Examination 636 boys and 1,079 girls passed, 60 boys and 14 girls being placed in the First Class. Sufficient merit was shown by 266 boys and 93 girls to entitle them to exemption from one or both parts of the Previous Examination. In the examination in Spoken French 126 of the 160 candidates passed; in Spoken German 11 of the 21 candidates. Of the Junior candidates, 3,044 boys and 1,832 girls passed, the numbers placed in the First Class being 368 and 64 respectively. In the Preliminary Examination (under fourteen) 2,575 boys and 1,643 girls satisfied the examiners.

THE writer of the series of articles in the *Times* on "Industrial Conditions in Germany," dealing with technical education, reviews the higher trade schools and (less fully) the technical high schools. He admits that "the services rendered to industrial Germany by these institutions are doubtless very great," but, at the same time, he "cannot help thinking that in regard to manufacturing industries the German high school has become rather too much of a fetish to many people in England":

I have already pointed out that in mechanical (excluding electrical) engineering it is thought to go too far by German manufacturers; then the departments of architecture, civil engineering, mathematics, and general science, however valuable in their place, would not help us in the least. The two really important departments, from this point of view, are chemistry and electrical engineering. It is impossible to exaggerate the importance of the first: it enters into every branch of manufacture and becomes more potent every day. At the high school teaching and experiment are pushed to the furthest theoretical limits, and the value to Germany is incalculable. Her chemical industries are reckoned to bring in fifty millions a year, but the application of chemical knowledge goes far beyond that and extends into a thousand channels. Nor can any man tell what it may bring forth to-morrow. This is the great lesson in industrial science that the high school has to teach. But it must not be forgotten that chemistry can be, and is, equally well taught at the Universities. So, too, electrical engineering, which has also been of immense value to Germany; but her rapid industrial advance in that line, compared with ourselves, is due less to superior knowledge than to the gratuitous retardation of the home industry by Government regulations.

AN extraordinary general meeting of the Court of Governors of University College, Reading, was held on February 6, to consider the desirability of accepting the offer made by Mr. Alfred Palmer, to give to the College a site of more than 6 acres in extent, having a frontage of 410 feet to the London Road, for the erection of new College buildings. The Lord Lieutenant of Berkshire moved, and Mr. Martin John Sutton seconded, a resolution accepting the offer. The Principal of the College (Mr. W. M. Childs), in supporting the resolution, said that Mr. Sutton had authorized him to say that his firm would present £6,000 to the building fund of the College. Besides that sum Lady Wantage had given £10,000, Mr. G. W. Palmer, M.P., £10,000, the Lord Lieutenant of the County £3,000, Mr. Morrell £1,000, and Mr. Owen Ridley, Chairman of the College Council, £500 towards the building fund. In addition to that they had the present site and buildings, which the Reading Corporation valuer had valued at £15,000, though he was not going to say that the College Council accepted that as representing the value of the property. They hoped to begin their new buildings in a few months' time. The resolution was carried unanimously. Some months ago the College authorities appealed for £80,000 for the purpose of erecting their new buildings, of which they have, according to the above figures, about half.

PRINCIPAL REICHEL, of Bangor, who has been to America on the Mosely Commission, addressed the British Sloyd Association for the promotion of all forms of Educational Handwork at University Hall, Gordon Square, W. (February 20), on manual studies in American schools and training colleges. The American object was to give more life and reality to ordinary book studies and to correct the tendency to confine pupils to literary and clerical qualifications. Boys were trained mainly in wood carpentry, turning, forging, and engine fitting. Girls were taught domestic economy, cooking, laundry work, and other useful pursuits. Both boys and girls were always directed to associate their work with drawing. The instruction was conducted by expert specialists, and in forging especially the execution was the most artistic Dr. Reichel ever saw. More attention was given to science and applied science than to Greek and Latin. Yet it was found that by giving rather less than one-fifth of the time of study to manual training the schools so engaged held their own in classical scholarships. At present there was no such training college in England. The system could not be carried out by artisans of imperfect education nor by educated people with no knowledge of *technique*. The combination of the two was required to carry out educational training in a great variety of handwork. The American manual trainer was a man or woman of good broad general education and of high technical skill.

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A COMMUNICATION on the supply of training colleges has been addressed by the British and Foreign School Society to all the new Education Authorities for England and Wales. It points out that the Society has for nearly a century taken a very prominent part in supplying the country with trained teachers. There are at the present time 594 resident and 25 day students in the colleges founded by the Society, and the roll of students (1810–1902) includes the names of 7,179 men and 8,238 women. The Acts of 1902 and 1903 throw upon the new Education Authorities the duty which has hitherto been left to private initiative, and the Society is most anxious to co-operate in every way with the Authorities. Apart from the question of religious training—where the requirements of the Act in the case of provided schools and colleges approach sufficiently near to the practice of the Society—there are two points which may easily be neglected, and which the Society considers of vital importance: (1) the need for residential training accommodation for a large proportion, at any rate, of the students, and (2) the importance of bringing together students with varied experiences and ideas. As a necessary corollary of the second consideration, the Society urge two other points—namely, that, at least in the case of the smaller boroughs and counties, several Authorities should combine in supplying the needed accommodation, and that all schemes should enact that candidates for training shall be free to choose their colleges without forfeiting any pecuniary assistance granted by the Authority for the district where they reside. The expenditure may be justified by requiring the students that receive help to settle for a prescribed period in the districts of the Authorities that expend local funds upon their education and training.

THE *Jewish Chronicle*, with proper pride, draws attention to the Jewish distinctions at the Universities:

In an especial degree Jews have been of service to three of the English centres of learning. With Manchester the name of Prof. Theodores will always be connected, nor can any historian omit reference to those of Profs. S. Alexander and Arthur Schuster, the services of both of whom are still at the disposal of the authorities of Owens College, as well as Mr. Philip Hartog, who has just been called to a wider sphere. The London University, founded with Jewish assistance, at a time when Jews were excluded from the older centres of learning, and created for the benefit of those who were prevented, either on account of religious tests or otherwise, from taking advantage of the opportunities offered by Oxford and Cambridge, has throughout its history included distinguished Jews among its ornaments, both on its governing body and its examining staff. Its constituent colleges count on their respective staffs to-day Prof. I. Gollancz, Mr. Israel Abrahams, Prof. Brandin, Dr. H. Hirschfeld, Dr. Charles Myers, the Rev. A. Wolf, and Mr. A. Kahn, amongst other co-religionists. The Goldsmid Professorship has, since its institution, been in Jewish hands, while, as Professor of Political Economy, Mr. Jacob Waley was for many years a colleague of Prof. Marks. At Cambridge, previously to the appointment of the present Jewish lecturers, the Jewish tradition was created and upheld by men such as Dr. Schiller-Szinessy and Dr. Schechter. Dr. Eichholz lectured on scientific subjects, and Dr. Waldstein, though not a conforming Jew, brilliantly maintained in printed controversy the political and ethical rights of Jewish members of modern nations. Dr. Charles Myers is also at the present time lecturing on science. Since the abolition of the tests, Dr. Neubauer and Mr. Solomon have been distinguished Jews connected with Oxford; and at the same University J. J. Sylvester, a Cambridge Second Wrangler, who was prevented by religious tests from proceeding to his degree, filled with unusual distinction the Savilian Professorship of Geometry, after having been connected with several other Universities in this country and the United States.

MR. THOMAS ALLEN sends to the press the following extract from a letter recently received from the Superintendent of Education in Natal (Mr. P. A. Barnett):—

Fortunately, we have no tenure difficulty here. Teachers in Government schools have the same right to appeal that all civil servants have. Teachers in proprietary schools hold their office under agreement with the proprietors. Teachers in Government-aided schools may be dismissed by their employers, but, no doubt, if any gross cases of injustice were brought to the notice of this Department, it might decline to continue its grants; but our troubles do not come from this quarter.

THE second of the informal meetings for educational discussion organized by the Incorporated Association of Assistant Masters was held on February 18 at the Bedford Head Hotel, Mr. G. F. Daniells in the chair. There was a good attendance of representative members and of educational friends and sympathizers, including Profs. Adamson and Gregory, Dr. R. D. Roberts, Dr. H. F. Heath, and Mr. A. T. Simmons. Prof. Adamson opened a discussion on "The Probable Effect of Training upon the Status and Remuneration of Assistant Masters." He thought that improvement in the status of assistant masters was bound to follow upon registration, and that improvement from training was impossible unless the training was seriously carried out. Such training should be post-graduate. Mr. Simmons believed that one of the first effects of the training movement would be that the schoolmaster and his work would be taken more seriously; but a more immediate effect would be the existence of two classes of assistant masters—"trained veterans," and "trained neophytes," brim-full of theory, whose only experience in practical teaching had been gained under the eye of the master of method. He believed that in time the disparity between the salaries of head masters and assistants would become less pronounced. Dr. Heath was of opinion that the means of training should be found in reduced cost of University training. The last of the present series of meetings will be held on March 17.

THE Executive Committee of the Incorporated Association of Assistant Masters has passed a resolution regretting that the London County Council, in preparing a scheme for the constitution of an Education Committee for the County of London, has decided against the co-optation on the Committee of "persons of experience in education," thus reversing the policy which the Council successfully adopted in connexion with the late Technical Education Board, a policy which is compulsory upon all Education Authorities under the principal Act of 1902.

THE School Nature-Study Union held a Conference (January 30) at the Passmore Edwards Settlement, Tavistock Place, Dr. Heath in the chair (in the absence of Mr. Cyril Jackson). Dr. Heath said we were now laying stress on attitude of mind and power of observation, and no study encouraged that power more than the study of Nature. It was the common things of life that brought out the spiritual and moral strength of the child. Mr. C. B. Gutteridge (Alleyn's School, Dulwich) read a paper, in which he declared his firm belief in the value of Nature study, and his hope that the Board of Education, some of whose inspectors were present, would hear what the society had to say, and would soon recognize Nature study as the best avenue of approach to exact scientific and laboratory work for young minds, when it was built on right foundations and carried out to logical conclusions. Too often under the style of "physical measurements" a kind of makeshift, false Nature study was indulged in. They did not seek to add another subject to the present time-table, but claimed that Nature study might take the place of our more formal science systems. Some inspectors encouraged Nature study, and allowed it a place in the time-table. Among young people Nature study had many enthusiastic followers, boys and girls with some innate love for the beautiful that only needed the right training to bear immense fruit in their other branches of learning, notably in geography and drawing. Country rambles were conducive to health, and should appeal to those anxious about physical degeneration. Parents, too, admitted the claims of Nature study, which they recognized as usefully filling up a portion of holiday time. Various conferences had recently recognized the value of Nature study, but they wanted official recognition, and still asked in vain to have recognized and accepted their syllabuses of study in this direction. In conclusion, the lecturer described his work at Alleyn's School and the system he followed, the teaching being as far as possible adapted to environment. Miss Johnson (Sompting, near Worthing) also read a paper on "Nature Study in a Village Elementary School," giving her own personal experience with her scholars. Canon Steward (Principal of the Salisbury Diocesan Training College) said that to have successful Nature study sense training in the infant school was imperative, and there must be no examinations.

AT a public meeting at Cork, convened by the Lord Mayor of Cork and by the Chairman of the Cork County Council (February 6) for the purpose of urging the claims of the Catholics of Ireland to equality of treatment in the matter of University education, the following resolution was passed:—

That, while pressing for the settlement of the Irish University question, we wish also to represent that Cork has now been for over half a century the seat of a University College; that the existing College is already provided with splendid collegiate buildings and an ample enclosure, and in its general equipment is well fitted for the highest educational purpose: that we desire to strongly urge the claims of the city of Cork that, in any settlement which may be arrived at, the continuance of a local University

college shall be secured to the city; that it is of the greatest importance not merely to the city and county of Cork, but to nearly the whole province of Munster, affecting a population of over a million of persons, that local facilities for University education entailing no sacrifice of conscience should be provided; that we are satisfied that the existing institution could be reconstructed on a basis which would enable Catholics to avail of it, while doing no injustice to our Protestant fellow-countrymen, thereby securing equality for all; that we trust that the Government and the Irish members of Parliament will take care that in this matter the special claims of Cork shall not be overlooked.

"There was a large and representative attendance of the Catholics of the city of Cork," says the *Freeman's Journal*, "and some prominent Protestants also testified by their presence to their sympathy with the demand of their fellow-countrymen on the subject of higher education."

THE centenary of the death of Kant was celebrated on February 12 by the University and the town of Königsberg, the Prussian Minister of Education, Dr. Studt, and various representatives of German academic corporations being present. A memorial tablet was unveiled by Dr. Studt, who delivered a message from the Emperor William, and referred in the course of an address to the services Kant had rendered to learning and to the world. The Minister further announced that he had assigned the sum of 10,000 marks (£500) from the public resources at his disposal in support of the teachers' aid fund. The town of Königsberg has devoted a similar sum to the foundation of an annual prize for essays on philosophical subjects. On the memorial tablet which was unveiled on the wall of the Royal Castle in the Kantstrasse is inscribed the well known saying of Kant: "The starry sky above me, and the moral law within me." An exhibition in connexion with the celebrations contained a collection of busts, portraits, prints, and sketches of Kant, together with several personal relics, including his hat, gloves, walking-stick, and snuff-box.

On the evening of February 12 a special commemorative meeting of the Fellows of the British Academy was held, Lord Reay, President of the Academy, in the chair. Dr. Shadworth Hodgson read a paper on "Kant's Life and Philosophy." There could be no doubt, he said, that it was the moral aspect of Kant's teaching that had most profoundly affected men's minds. Kant's abiding influence was due to his discovery of the categorical, as distinguished from the conditional, imperative—the new kind of causality through a rational will which most men felt to be a fundamental truth.

THE Königsberg University celebration of the hundredth anniversary of the death of Kant has happened to coincide with the jubilee of the Königsberger *Hartungsche Zeitung*, whose enterprising conductors have drawn from our Prime Minister this message:

Königsberg does well to keep alive every memory connected with the great man whose writings opened a new epoch in the development of philosophy. I am proud to think that, though Kant was a "German of the Germans," his ancestors were countrymen of my own; so that Scotland may have something more than a strictly philosophic interest in the perpetuation of his memory.

THE keenness of American mathematical teachers is manifested by the formation of an Association of Teachers of Mathematics in the Middle States and Maryland at a great meeting at Teachers' College, New York City, on November 28. Over two hundred were enrolled. Prof. David Eugene Smith, Teachers' College, was elected President; and Dr. Arthur Schulze, High School of Commerce, New York City, Secretary. President Butler, of Columbia, delivered an address of welcome; papers on various phases of mathematical teaching were read; and there was an exhibition of models, calculating machines, teaching devices, &c. The next meeting will take place at Columbia University about Easter.

DURING 1903 an opinion on the question of adopting a uniform style of handwriting in the Queensland State schools was sought from school teachers. The report contained the following particulars:—

In favour of sloping style, 52; upright style, 46; slightly sloping, 12. Schools using: Jackson's Upright, 40—representing 2,814 children; Angus and Robertson's Australian, 20—representing 3,629 children; Federal Series, 15—representing 1,739 children; Vere Foster's Original, 8—representing 973 children; Vere Foster's Bold, 10—representing 2,404 children; Collins's Graphic, 87—representing 461 children; no copy books, 3—representing 96 children; Chambers's Government Hand, 2—representing 310 children; Nelson's Royal Crown, 1—representing 1,807 children; Marcus Ward's, 1—representing 7 children. The Chamber of Commerce, Brisbane, condemns the upright style of handwriting.

But the voting must have been very limited in area.

THE annual report of the Carnegie Trustees for the Universities of Scotland states that the Committee had thought it prudent to make provision for some limitation of the steadily increasing expenditure on class fees, and had framed two new regulations regarding payment of fees—one raising the standard of preliminary education required from beneficiaries, and the other affecting re-attendance at classes. During the last year £20,365 was spent on the four Universities.

WE record, with deep regret, the death of Sir Leslie Stephen, K.C.B., at the age of seventy-one, after a prolonged period of indifferent health. He was a keen thinker, with the gift of lucid expression, an indefatigable worker, and a straightforward controversialist. Apart from his editorship of the "Dictionary of National Biography," his most laborious work lay in ethics, especially on the historical side, and his most popular work in English literature. He was an enthusiastic Alpinist.

THE premature death of Mr. W. Galbraith Miller, Senior Lecturer in Law, Glasgow University, is deeply regretted. He was for twenty-six years an enthusiastic teacher and writer on three important branches of law—jurisprudence, public law, and international law. He is said to have been "the oldest teacher of law in Scotland." His attitude was German rather than English.

UNIVERSITIES.

(*From our own Correspondent.*)

Oxford.

WHAT action is to be taken as the result of the narrow majority in favour of "the barbarians" as against the Greeks in Congregation on February 9 is not yet certain. A majority of two does not smooth the path much for the reformers. There were who said that, even before the matter came before Convocation, a poll of Congregation was to be demanded. Although there was a large attendance at Congregation on February 9, yet there were a good many absentees—some perhaps thinking that, as was the case in the ladies' degree question, the matter would not be decided at a single meeting. Moreover, with the system of pricking votes on strips of paper while voters push past the Proctors, there is always a possibility of unintentional error, even though this year the Senior Proctor is one of our leading mathematicians. This idea of a poll seems now to have been dropped, and the latest report is that a statute is in process of being drafted. If there is to be a *ukase* issued and non-residents called up for Convocation, it certainly looks very much as if the verdict of Congregation would be reversed—particularly if stress is to be laid on the fact that exemption from Greek in Responsions will mean also exemption from Greek in the examination in the Gospels. We fancy that the clerical vote outside of Oxford would be dead against the innovation.

Yet at the meeting of Congregation the divinity question was carefully avoided by all the speakers. The speaking was not of a very high order, and indeed Oxford does not at present produce orators. We seem to be so critical of any attempt at appealing to the sentimental side that the carefully prepared epigram and the insidious dilemma are the only accepted rhetorical arts. We had been informed before the meeting that there were to be two set speakers on each side, Mr. Macan and Dr. Bourne for the men of science, and Mr. Godley and Mr. Phelps for the Greeks; but, as a matter of fact, the Warden of Wadham upset the arranged order by following Mr. Macan and supporting him. So that the speakers were three to one in favour of the resolution. Whether Mr. Phelps decided that Dr. Bourne's speech had sufficiently damaged the cause for which he was speaking, or whether the Vice-Chancellor, though known to be on the Greek side, considered that four speeches were enough, at any rate the division was taken immediately after Dr. Bourne's speech. Mr. Godley's best points were that the men of science acknowledged that an education with Greek was the most comprehensive and best of educations, and yet they were asking the University to provide them with something worse than the best education; and, secondly, that, though the resolution proposed to represent the scientific view on the subject, the opinion of teachers of science in the University was not unanimous, while distinguished men of science outside the University were opposed to the change. The

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arguments for the change were that the Greek learned was a pitiful amount, useless for scientific purposes even in the matter of constructing scientific terms, and that the time spent on acquiring the minimum was uncongenial to the learner and to the teacher, and involved both wasting their time.

There was one point which did not come in for notice, and that was the fact that while originally we were supposed to be about to render assistance to a "worthy class"—*i.e.*, those who were incapable of managing the Greek, and, therefore, not the highest class—yet Dr. Bourne talked of the measure as if it would provide us (if carried) with a supply of brilliant original researchers. We do not really think that it was for this small class that the agitation was started or conducted. Some of Dr. Bourne's supporters were rather horrified by the mention of Heraclitus, and all his opponents by his repeated description of Greek studies as "Hellenistic."

Hot-foot on the Greek discussion we are threatened with yet another; indeed, the matter is to come up on March 1. This new vexed question arises over the appointment of examiners in the Theology School. One party, *i.e.*, the High Church party, regard the Theology School as the preliminary to taking "Anglican orders," and as the one hold that "the Church" still keeps over the University. Therefore, they wish to limit the examiners—they cannot, of course, limit the examinees—to their own denomination. The other party hold that the Theology School in itself is not, and was not intended to be, thus narrowed in its scope; and that, seeing that Oxford has opened its doors to a number of able men—both teachers and taught—who do not belong to the Established Church, we are doing a narrow and misguided thing if we do not admit as examiners men whose theological work is of the highest class and reputation. Mr. Leighton Pullan is a strenuous advocate against the admission of these men; but the other view has been presented both ably and moderately by Mr. Allen in a pamphlet which has been circulated among members of Congregation.

More literature is flying about with reference to the Regius Professorship of Medicine, but at present matters seem at a deadlock. An article appeared in the *Oxford Magazine* imputing that a suggestion was sent to Mr. Balfour "in the name of the University" that the Regius Professorship should be combined with that of the Readership in Pathology. This statement drew an immediate reply from the Vice-Chancellor to the effect that no such communication was sent "in the name of the University."

The syllabus for the new Examination in Modern Languages has just been issued, and has produced the inevitable crop of criticism. It certainly seems as if not much weight had been attached in the regulations to the idea of regarding the languages as "living instruments of thought," for it is pointed out that no modern prose writer later than 1762 is included in the French scheme, with the exception of Victor Hugo; while in the German scheme "no historian, no philosopher, and no writer of science finds a place." One critic describes the new school as constituted as being a school of "mediæval linguistics." From what has been written above it will be seen that things are more lively in Oxford than they generally are in the Lent Term.

The O.U.D.S. has just finished a successful production of "As You Like It." The general level of performance was creditably high, and the "walking athlete" has not bulked so largely in the minor characters as used to be the case a decade ago. The wrestling scene was unusually realistic. All the same, it seems a pity that the Society should devote itself to producing what has so often been produced before. We are, of course, at Oxford much more handicapped in our choice of subjects than our friends at Cambridge; but it seems strange that we should leave it to Cambridge, despite their wider choice, to produce—and produce excellently—Greek plays which are not to be seen in London. We still can recall a very successful "Frogs" in Oxford.

The floods drove away the University Eight from the Isis, where practice and coaching had been carried on under almost insuperable difficulties. The Eight is not very good, and has been further handicapped by the fact that the President, Mr. Monier-Williams, is unable to row; in the latter respect we can exchange sympathies with Cambridge, who are in a similar plight.

The Torpids have not been very exhilarating, except to the bold spirits who ploughed along the submerged tow-path. The stream has pulled weak crews to pieces, and at the same time rendered the task of making bumps more difficult for the inexperienced coxswain.

Our Association Eleven furnished Cambridge, as we feared, with a bloodless victory; and it certainly looks as if the Hockey team would follow the bad example, as they were beaten in the last trial game by a scratch team mainly composed of the brothers Stocks. Hockey cup ties are now in full swing, but the grounds have been in a terrible state of water and mud, and science at a discount. The golf players have also been full of lamentations at their "mud-larking." Lacrosse seems to have taken a firm hold, and there are now two teams, so that the undergraduate still continues to take exercise.

(From our own Correspondent.)

Cambridge.

On March 1 the King and Queen will come here to open the new buildings and to bestow their benison upon the bricks and mortar which have so recently sprung up in our midst. The official programme is as follows. Arriving at 12 o'clock, their Majesties will drive to the Senate House, where there will be bowing, scraping, and speeches, the Corporation having previously discharged their address upon the platform of the Great Northern station. An adjournment will be made for lunch, at which the number of Cambridge guests is to be strictly limited to twenty gentlemen and five ladies. The next item is the assembly in the quadrangle of the new buildings, where each block will be inspected and declared open by the King.

The attitude of the townspeople is decidedly interesting. As at first the affair was deemed a purely University function, the Corporation decided to have no decoration in the streets, and agreed to a route for the King's procession which afforded most room for the expected crowds, increased numbers in the narrow streets naturally meaning more police. It suddenly struck some of the tradesmen, however, that windows on the line of the route would be a valuable asset, and petitioning is in full force to upset the present arrangements, so as to make the King pass through the business parts of the town. Rumours of knighthoods are very rife: those little things are highly prized in a society where procedure is a matter of local convention and essentially *sui generis*. London and Paris are finding frocks for the wives and daughters of the dons; and, if the weather is favourable, the affair may be a grand success.

The University possesses a very valuable asset in the shape of the land lying between Trumpington Street and Hills Road. The western portion of this, consisting of 20 acres, is now occupied by the Botanical Gardens, while the eastern portion of 17 acres is let out in allotments at a rental of about £20 per acre. Recently the Education Committee of the County Council have made an offer of £7,000 for about $1\frac{3}{4}$ acres of this eastern portion for the purpose of building a county school for girls. The Botanical Garden Syndicate are against the proposed sale, on the ground that it may impede the development of the Botanical Department in the near, if not in the remote, future. The Financial Board strongly recommend the sale. In the debate on the subject, Mr. A. P. Humphry, whose experience both as a member of the County Council and as a University financier is very considerable, pointed out the pecuniary advantages of the transaction, and also dwelt upon an argument which, as a rule, is not introduced into University debates. He suggested that the colleges and the University, being owners of 50 square miles of land in the county, should consider their position as landlords, and do something for a class to which their tenants mainly belong, even at the cost of some small sacrifice. The land is too far from the centre of the town to be available for any University purpose other than that of a botanical garden; and, as ordinary building land, the price offered was not likely to be exceeded in the present generation. The land will probably go.

There are to be changes in the management of the Pitt Press: hitherto the partnership between the University and Messrs. Clay being on the terms that the University has five-sixths of the capital and profits, while Messrs. J. & C. F. Clay take one-sixth. There are practically two businesses, the printing in Cambridge and the publishing in London at the Cambridge Press Warehouse; the average profit made by the University being about £4,000 per annum. The new arrangement is that Mr. John Clay is to take one-tenth of the business and to manage the Cambridge department as hitherto, while Mr. C. F. Clay becomes a salaried manager of the London business. The change seems a wise one, and as long as the Press is such a good dividend earner criticism in the Senate will not be forthcoming.

The Library Syndicate have made some new proposals for the

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reorganization of the building; the suggestions seem sensible enough, though the provisions against fire are absolutely inadequate. There is a Fire Prevention Syndicate in existence, but the fact remains that our most valuable possession, the Library, affords very slight evidence of the most elementary precautions having been taken against fire, or, what is worse in this case, water.

There is no hint yet as to who is to obtain the vacant Mastership at Magdalene; the present Lord Braybrooke evidently does not care to present himself, but he will not do much better.

London. In view of the fact that, until further order, a candidate will be allowed to take the Intermediate Examination for Internal Students and the B.A. Examination for External Students on condition that he take at some time previous to his Final Examination any extra subjects which a candidate taking the Intermediate Examination for External Students would have been required to take, it was resolved (January 27): "that a candidate taking the extra subject to complete his Intermediate Examination as an external student, after having passed the Intermediate Examination as an internal student, be required to pay a fee of £5, which shall cover his first entry for the Final Examination."

The Institution of Civil Engineers have decided to recognize the B.Sc. degree in Engineering of the University as a degree exempting from the Associate Membership Examination.

Manchester. At a meeting of the Court of Governors (February 4), the following resolution was passed:—

That this meeting of the University Court do hereby approve of the Bill intended to be introduced into Parliament intituled "A Bill to incorporate the Owens College, Manchester, with the Victoria University of Manchester, and to transfer the property and liabilities of the said College to the Victoria University of Manchester, and for other purposes," subject to such additions and alterations and variations as Parliament may think fit to make therein.

On the same day a similar resolution was passed by the Court of Governors of Owens College.

Dr. Sanday and Dr. Fairbairn were added to the Advisory Committee of the Faculty of Theology.

Sir F. Forbes Adam has been appointed Chairman of the University Council. The following have been elected Deans of Faculty:—Arts, Prof. Tout; Science, Prof. Schuster; Music, Dr. Brodsky; Commerce, Prof. Chapman.

Victoria—Leeds. At a meeting of the members of the Yorkshire College Company (February 10), Mr. A. G. Lupton (Chairman of the Council) said he believed that the charter for a new University for Yorkshire would now pass without opposition. Various little alterations in the charter had been made, and the final draft was now in the hands of the Privy Council. He moved the confirmation of the resolution passed on January 20, which approved the proposal now before Parliament in the form of a Bill to merge the Yorkshire College in the Victoria University of Yorkshire and to transfer all the property and liabilities of the College to the University. This was seconded by Mr. F. W. Barr, and carried unanimously. Nearly £40,000 has been raised in the county towards the preliminary expenses of the new University.

The Council of University College, Sheffield, have petitioned Parliament against the portion of the Leeds Bill claiming the term "Yorkshire" in the title of the University, setting out a long array of objections.

Wales—Cardiff. The inaugural meeting of the Association of the University Settlement in Cardiff was held on February 4. The gathering was large and enthusiastic. The following motion, proposed by Principal Griffiths, was passed:—

This meeting desires to express its satisfaction with the steps that have now been taken to utilize the valuable gifts of Lord Tredegar and Mr. Woolcott Thompson for the purposes of the University Settlement, and its cordial approval of the decision of the Association to endeavour at once to secure the funds that are necessary for the completion and equipment of the first part of the proposed buildings.

At the half-yearly meeting of the Court of Governors (February 18), Principal Griffiths said he feared that, unless Sir Alfred Thomas and his colleagues exerted themselves in the House of Commons, Wales would not participate in the increased Government grants to University colleges. He knew of the deputation that waited upon the Chancellor, and he had communicated with his brother Principals in Wales on the subject, but he got a very broad hint that no Welsh college need apply. The reason given was that the University colleges in Wales were already in receipt of £4,000 per annum from the Treasury, whereas many of the English colleges received only £2,000. Thus Wales had been left out in the cold. He understood that of the extra grants contemplated not a penny was to come to Wales. Even if it were otherwise, he feared the extra grant would be small, because it appeared that the governing principle in the distribution of the increased vote would be that the distribution should be in proportion to local efforts. Thus when in Liverpool, for instance, seventeen citizens could be found to give £10,000 each the efforts in South Wales would in comparison appear very puny. Mr. Phillips said that distribution *pro rata* to local effort should prove an admirable incentive.

The Court at the same meeting passed a statute to enable them to charge an annual registration fee of one guinea to each student (as at Bangor and Aberystwyth).

Principal Griffiths said he was not lacking in sympathy with the working classes, but this matter must be regarded from a business standpoint. That the working classes gained from having the college in their midst was shown by the fact that they had at present in the college 150 students who, in virtue of exhibitions and scholarships, were enjoying free tuition. Last session there were 164 free students. No college in the kingdom could show such a higher percentage of free students; yet the finances of the college were such that the Finance Committee dared hardly give him permission to get absolutely essential apparatus for use in the college. In the Medical School they had actually to send some students to London two or three weeks before the examinations, so that they could see the ordinary apparatus in use in ordinary laboratories. They should not do an injury to a large mass of students in order to benefit the very poorest. The cost per head of tuition in that college was between £23 and £24, without including the capital value of the buildings, and yet the students were paying only £10 for that tuition. Thus every additional student that came to the college above a certain age made their financial position worse. This season the students had increased by 34, and the increase was in the Chemistry, Engineering, and Mining Departments—the very departments that South Wales wished the college to develop—and in consequence of this increase he would be bound to ask for two extra lecturers and demonstrators. He did not think it was too much to ask the parents of those students to pay the extra guinea for the second and third years.

Glasgow. Three names having been put forward for the Chancellorship—the Earl of Stair, Lord Kelvin, and Mr. Haldane—it will be necessary to take a vote. The formal election cannot be made till the next half-yearly meeting of the Council (April 6). The electors number 6,363.

St. Andrews. St. Andrews University has decided to introduce a Commemoration Day in order mainly that those who have left this seat of learning may be led to maintain their interest in its work and progress. The first Commemoration Day will be observed in connexion with the Graduation on March 29, and it will take the form of a dinner in the evening, and, quite appropriately, a golf match on the following day.

ARITHMETICAL CURIOSITIES.

A recent number of *Success* publishes the following, sent by Henry Tannenbaum, of Toledo, O.:—

123456789	times	9	plus	10	equals	1111111111,
123456789	„	18	„	20	„	2222222222,
123456789	„	27	„	30	„	3333333333,
123456789	„	36	„	40	„	4444444444,
123456789	„	45	„	50	„	5555555555,
123456789	„	54	„	60	„	6666666666,
123456789	„	63	„	70	„	7777777777,
123456789	„	72	„	80	„	8888888888,
123456789	„	81	„	90	„	9999999999.

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This table is still more interesting when it is noticed that each multiplier is divisible by 9, and that when the figures of each answer are added together and the added number is subtracted the answer is 0. For example, the sum of 1, 1, 1, 1, 1, 1, 1, 1, 1 is 10; 10 minus 10 is 0.

Mr. Tannenbaum also sends the following:—

987654321	times	9	equals	8888888889,
987654321	„	18	„	17777777778,
987654321	„	27	„	26666666667,
987654321	„	36	„	35555555556,
987654321	„	45	„	44444444445,
987654321	„	54	„	53333333334,
987654321	„	63	„	62222222223,
987654321	„	72	„	71111111112,
987654321	„	81	„	80000000001.

In this table it will also be noticed that each multiplier is divisible by 9, and that, if the figures in each answer are added together, they will form a total which, if added together, will equal 9. For example, take the second answer, 17777777778. These figures, added together, equal 72, and 7 plus 2 is 9.

NATURE STUDY IN PRACTICE.

ELSEWHERE we report the recent Conference of the School Nature-study Union, and refer to Mr. C. B. Gutteridge's lecture. On the particular practice at Alleyn's School, Dulwich, under his personal direction, he said:

As the master principally concerned with the introduction of Nature study at Alleyn's School nearly two years ago, I have always advocated the seasons as our guide. I have recently been enabled to incorporate into our school system, by the kindness of my chief, the "Alleyn Nature-study and Observation Leaflets," which I have published for the autumn and spring terms. I take two junior forms and a senior form in Nature study, and the boys, by the use of my leaflets, are inspired with an appropriate subject suitable to the time of year, week by week. The leaflets contain twelve ideas on heuristic lines, and for two separate hours weekly in one form, and for an hour in the other two forms, the boys in turn discuss before the class the ideas my leaflets have suggested to them, or recite (as it is called in America)—that is, talk of their thoughts and also what they have observed. I do very little, except keep the debate in hand as a guiding chairman and sum up or correct misstatements.

We both learn from one another and enjoy it, and anticipate the "lesson," if such a term is applicable to our informal discussions. The boys bring drawings and objects relative to the matter in hand whenever I ask them to do so, and these illustrations and gifts are arranged about the schoolroom to assist the Nature-study atmosphere. Our art master and form masters also kindly correlate much of their drawing lessons to my Nature-study subject. In the upper part of the school, where I am a form master, with thirty-four big boys of ages fourteen to sixteen, the plan as indicated is working with enthusiasm and success.

We are dependent on the weather, of course, for our frequent excursions away into the country or outside at work in the school field. The Nature garden work is sometimes done in school hours, but more often in the leisure time of the boys and myself. The boys bring their own tools—good spades, rakes, forks, trowels, &c.; and, by our united efforts, we have made six enclosed plots measuring about 12 feet long by 5 or 6 feet wide. Seeds, bulbs, plants, &c., provided by the boys, are grown in these plots, under my direct superintendence, for observational purposes or for direct use in the schoolroom. Last year we grew flax as a curiosity in one plot. Note-books are, of course, at hand, and my garden captains, in charge of five, assist when there are thirty boys at work. I can always enlist the services of a very enthusiastic staff of willing volunteers whenever I wish, and some of my bigger boys are now beginning to want to join in the outdoor operations. All the work proper to a Nature garden in the varying seasons of the year is done by ourselves, and the boys are thus encouraged in the valuable principle of self-help and the dignity attaching to manual labour. The boys are also stimulated to use the camera—there is a very flourishing photographic society at Alleyn's—in our special Nature-study work as an evidence and record of their observations.

At Alleyn's we are fortunate in having a fine field of about 13 acres in extent, with plenty of trees and an adjacent annexe for tennis courts, near to which are our gardens already mentioned. The trees in the school field have been the subjects of much talk and discussion, as we have oaks, poplars, chestnuts, elms, &c., not omitting rooks and crows, and their interesting characters and conversations.

The Nature-study teaching is thus as far as possible adapted to environment. One particular line of inquiry we have had in hand is the peculiar causes of the destruction of Dulwich oak trees, their great enemies being the goat and wood moths, fungus growth, and their own strength, which often exhausts the surrounding soil.

In conclusion, I had resolved to devote some of my leisure time to making the acquaintance of my pupils outside the schoolroom. First of all, our rambles comprised visits to museums, the Houses of Parliament, the Royal Stables, the Royal Mint, the Royal Academy, and other picture galleries and public buildings, and sometimes occasional visits to the country. We most frequently visited the Natural History Museum, South Kensington, as the enthusiasm of my boys and myself seemed most attracted there; and gradually, from a natural love of open air and country scenes, we wished to see the real things. Now, our happiest hunting ground is *via* Herne Hill to Bromley for Hayes Common, and our Nature-study work in school is thus supplemented by these whole-day outings on Saturdays, our leisure day, through which we all thus gain health and some useful knowledge of the common things that surround us. Such is my work; and, on behalf of all engaged in similar work in secondary schools, I would like to advance the claims of Nature study for more direct official recognition by the Board of Education.

THE TEACHING OF NATURAL SCIENCE.

THE Secretaries of the Royal Society have submitted to the Universities of the United Kingdom the following "Statement regarding Scientific Education in Schools, drawn up by a Committee of the Royal Society":—

Notwithstanding efforts extending over more than half a century, it still remains substantially true that the public schools have devised for themselves no adequate way of assimilating into their system of education the principles and methods of science. The experience of "modern sides" and other arrangements shows that it can hardly be expected that, without external stimulus and assistance, a type of public-school education can be evolved which, whilst retaining literary culture, will at the same time broaden it by scientific interests. On the other hand, it is admitted that many students trained in the recent foundations for technical scientific instruction have remained ignorant of essential subjects of general education.

The bodies which can do most to promote and encourage improvement in these matters are the Universities, through the influence which they are in a position to exert on secondary education. This improvement will not, however, be brought about by making the avenues to degrees in scientific or other subjects easier than at present. Rather, the test of preliminary general education is too slight already, with the result that a wide gap is often established between scientific students careless of literary form and other students ignorant of scientific method.

It may be suggested that the Universities might expand and improve their general tests, so as to make them correspond with the education, both literary and scientific, which a student, matriculating at the age of nineteen years, should be expected to have acquired; and that they should themselves make provision, in cases where this test is not satisfied, for ensuring the completion of the general preliminary education of their students, before close specialization is allowed.

In particular, it appears desirable that some means should be found for giving a wider range of attainment to students preparing for the profession of teaching. The result of the existing system is usually to place the supreme control of a public school in the hands of a head master who has little knowledge of the scientific side of education; while the instructors in many colleges have to deal with students who have had no training in the exact and orderly expression of their ideas.

Our main intention is not, however, to offer detailed suggestions, but to express our belief that this question of the adaptation of secondary education to modern conditions involves problems that should not be left to individual effort, or even to public legislative control; that it is rather a subject in which the Universities of the United Kingdom might be expected to lead the way and exert their powerful influence for the benefit of the nation.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

"ESPERANTO."

To the Editor of "The Educational Times."

DEAR SIR,—Allow me to thank you for your editorial note to M. Hamonet's letter. May I also point out that he is evidently under the extraordinary impression that by "auxiliary" is meant

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a "universal" language to destroy other languages. Quite the contrary is the case: what is advocated is some kind of international shorthand, so to say, which, being used for extra-national communications, will permit the devotion of much more time to the real study of national languages, those treasure-houses of the past. I cannot off-hand give the number of French *lycées* where Esperanto is taught by official permission—they are about twenty-three: amongst them I remember Havre, Amiens, Boulogne, Dijon, Grenoble, besides at least five or six in Paris. If M. Hamonet will send me his address, I will send him the full list, with the names of the professors; it is too long to be given here. —I am, Sir, &c.,

E. A. LAWRENCE.

TENURE IN SECONDARY ENDOWED SCHOOLS.

To the Editor of "The Educational Times."

SIR,—I beg to thank you for your article on "The Tenure of Assistant Masters." There seems to me only one point that now needs serious discussion, and that is, whether the decision of the Board of Education should be final.

Is it really worth while to insert such a clause?

I am a constant reader of the *Schoolmaster*, and have been for several years. Since primary teachers were granted a right of appeal, I do not recall a single instance of a case of wrongful dismissal appearing in its columns.

I quite agree with your leader: "There will be very few appeals." But, even if there were many, and the decisions of the Board of Education were right and just, what else could the appellant expect from a further appeal?—I am, Sir, &c.,

THOMAS ALLEN.

Woodbury, Malvern Link, *February* 19, 1904.

COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on February 20. Present: Mr. Butler, Vice-President, in the Chair; Rev. J. B. Blomfield, Mr. Charles, Mr. Chettle, Miss Crookshank, Mr. Eve, Mr. Hawe, Mr. Kelland, Rev. R. Lee, Rev. G. E. Mackie, Mr. Millar Inglis, Mr. Pinches, Miss Punnett, Dr. R. P. Scott, and Rev. Dr. Scott.

The minutes of the last meeting were read and confirmed.

The Secretary reported a considerable increase in the number of entries for the forthcoming Professional Preliminary Examination to take place on the 1st to 3rd of March.

The Dean and Treasurer were appointed to represent the views of the Council at a conference with the Consultative Committee on the subject of School-leaving Certificates on February 25.

Diplomas were granted to Miss G. Clemmans and Miss J. F. Montgomery, who had passed the required examination for the Associateship of the College.

The report of the Finance Committee was adopted.

The report of the Examination Committee was adopted.

The report of the Dean and Sub-Dean for Inspections was adopted, and it was resolved that the Inspection of Schools under the new Scheme should be continued.

Professor J. Adams, B.Sc., M.A., F.C.P., Principal of the London Day Training College, was elected a member of the Council.

The Rev. T. W. Sharpe, C.B., was re-elected President of the Council, and Dr. R. Wormell, Sir Philip Magnus, and Mr. E. A. Butler, Vice-Presidents. Mr. H W. Eve was re-elected Dean, and Mr. E. E. Pinches Treasurer of the College.

The following persons were elected members of the College:—

Miss E. Dorman, A.C.P., 19 Babbacombe Road, Bromley, Kent.
Mr. R. P. Jones, B.A Lond., L.C.P., Tettenhall College, Wolverhampton.
Mr. J. Lawrence, M.A. Oxon., M.A., D Lit. Lond., 72 South Hill Park, Hampstead, N.W.
Mr. A. C. Patrick, L.C.P., Cliff House, Bruton, Somerset.
Miss M. B. Roe, A.C.P., 72 Breakspears Road, Brockley, S.E.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHOR.—Adamson's Our Defective System of Training Teachers.

By the GENERAL MEDICAL COUNCIL.—Minutes of the Council for the Year 1903.

By the BUREAU OF EDUCATION, WASHINGTON.—Report of the Commissioner of Education for the Year 1902, Vol. I.

By the SMITHSONIAN INSTITUTION.—Annual Report of the Board of Regents for the Year ending 30 June, 1902; Report of the U.S. National Museum for the Year ending 30 June, 1901.

By C. J. CLAY & SONS.—Cambridge Higher Local Examination Class List, &c., for December, 1903; Cartmell's Kohlrausch's Das Jahr 1813; Flather's Scott's Kenilworth; Plummer's Corinthians II. (Cambridge Bible for Schools and Cambridge Greek Testament).

By W. B. CLIVE.—London University Guide and University Correspondence College Calendar, 1904; Matriculation Directory, January, 1904; Hall's Modern Navigation.

By GINN & Co.—Baker's Elementary Plane Geometry; Gaston's Irving's Oliver Goldsmith; Painter's Elementary Guide to Literary Criticism; Van Dyke's Introduction to the Poems of Tennyson.

By HACHETTE & Co.—Rey's de Ségur's Histoire de la Princesse Rosette; Saunois's La Moquense; Smith's Translation of Rousselle's Metric System; Themoin's French Lessons on the Gouin Method, Vol. I.; Weber's New Course of Commercial German in Twenty Lessons; Weiss's Hauff's Die Geschichte von Kalif Storch; and Immermann's Die Wunder im Spessart.

By HUTCHINSON & Co.—Stanley's Life of Dr. Arnold (abridged).

By MACMILLAN & Co.—Allcock's Theoretical Geometry for Beginners, Part III.; Barnard and Child's New Geometry for Junior Forms; Cotterill's Tennyson's The Cup; Fowler's Palgrave's Golden Treasury of Songs and Lyrics, Book First; Hall and Stevens's A School Geometry, Part V., and Parts I.-V. in one volume; Milner-Barry's von Scheffel's Der Trompeter von Sakkingen, and Word- and Phrase-Book to the same; Rowe and Webb's Tennyson's Dream of Fair Women, &c.

By METHUEN & Co.—Boulton's Geometry on Modern Lines; Burnside's Old Testament History for Schools; Sornet and Acatos's Junior French Grammar; South's Gospel according to St. Matthew.

By RIVINGTONS.—Pressland's Introduction to the Study of Geometry; Wade's Second Year French Writer.

Calendars of the Pharmaceutical Society and the University of Liverpool.

COLLEGE OF PRECEPTORS.

CERTIFICATE EXAMINATION, DECEMBER, 1903.

The following is the list of the successful candidates at the Colonial and Foreign Centres.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively:—

a. = Arithmetic.	*ge.* = German.
al. = Algebra.	*gm.* = Geometry.
d. = Drawing.	*h.* = History.
e. = English.	*l.* = Latin.
f. = French.	*s.* = Scripture.
g. = Geography.	*sp.* = Spanish.

The small figures [1] and [2] prefixed to names in the Second and Third Class Lists denote that the Candidates were entered for the First and Second Classes respectively.

In the addresses - Acad. = Academy, C. or Coll. = College, Coll. S. = Collegiate School, Comm. = Commercial, Conv. = Convent, End. = Endowed, Found. = Foundation, H. = House, Inst. = Institute, Int. = International, Inter. = Intermediate, Prep. = Preparatory, S. = School, Tech. = Technical, Univ. = University.

BOYS.

FIRST CLASS (OR SENIOR).—PASS DIVISION.

Nicolle, O.D. *s.*	City College, Colombo
Morgan, H.B.	Private tuition

SECOND CLASS (OR JUNIOR).—HONOURS DIVISION.

Cocks, M.B. *e.f.*	Private tuition
Wills, C.S. *a.f.*	The Middle S., Georgetown, B. Guiana
Francis, O.M. *l.*	Gram. S., St. George's, Grenada
Francis, D.A. *a.*	Private tuition
Durham, J.A.	The Middle S., Georgetown, B. Guiana

SECOND CLASS [OR JUNIOR]—PASS DIVISION.

[1]Gairy, E.J.	Private tuition
Nurse, S.D.	The Middle S., Georgetown, B. Guiana
Otway, I.M. *l.*	Gram. S., St. George's, Granada
Perera, H.W.G.	Central College, Colombo
Murugasu, M.S.	Central College, Colombo
Baptiste, E.C.D.	Private tuition
Peiris, W.S.J. *al.*	City College, Colombo
Fernando, M.J.	City College, Colombo
[1]Ponniah, W.G.	Wesleyan Central Inst., Batticaloa
Craig, A.O.	Wesleyan High S., Marina, Lagos
Subramanium, J.	City College, Colombo
Mariampillai, S.	St. Michael's English High S., Batticaloa
Panditheseker, C.F.O.	Central College, Colombo
[1]Canagasabey, A.E.R.	Wesleyan Central Inst., Batticaloa
Setukavalar, S.H.	Wesleyan Central Inst., Batticaloa
Fernandez, F.	City College, Colombo
Roberts, O.O.	Wesleyan High S., Marina, Lagos

THIRD CLASS—HONOURS DIVISION.

McLeod, W.W.J. *e.a.gm.*	Private tuition
Roberts, C.C. *e.a.*	Private tuition
Viechweg, W. *s.e.d.*	Private tuition
Fernando, M.A. *a.*	City College, Colombo
[Estill, J. *e.a.gm.*	Marist Brothers' S., Johannesburg
[Stanislaus, N.	Private tuition

THIRD CLASS—PASS DIVISION.

[2]Retnlah, S.J.	St. Andrew's S., Batticaloa
[2]Lawrie, J.H.	Lomas Acad., Lomas de Zamora
[2]Jansz, N.C.	City College, Colombo
Cumming, R.W. *a.*	York House, Mussooree, India
Hirst, P.N. *a. sp. d.*	Lomas Acad., Lomas de Zamora
[2]Perera, S.	City College, Colombo
[2]Vyramuttu, D.R.	Wesleyan Central Inst., Batticaloa
Gibbs, J.W.	Private tuition
[Arthur, B.	Coll. School, Cape Coast Castle
Barker, E.F.A. *g.a.*	The Middle S., Georgetown, B. Guiana
[2]Brown, A.F.	Lomas Acad., Lomas de Zamora
Denny, J.P. *g.*	The Middle S., Georgetown, B. Guiana
Markin, F.	Collegiate School, Cape Coast Castle
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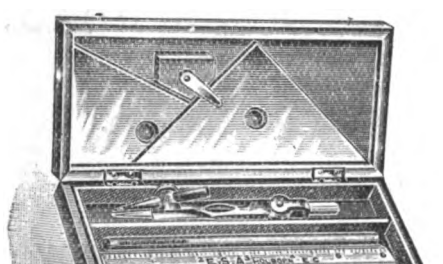

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CURRENT EVENTS.

Fixtures.

DR. EMIL REICH will address a joint meeting of the College of Preceptors and the Assistant Masters' Association on "The Introduction of the Study of General History into Secondary Schools, on the bases of Geo-Politics and Psychology," at the College of Preceptors on March 23, at 7.30 p.m.

* * *

M. GEORGE PETILLEAU will hold a "Causerie entremêlée de Récitations et de Monologues" before the Société Nationale de Professeurs de Français en Angleterre at the College of Preceptors on March 26, at 4 p.m.

* * *

THE KING will visit the University of Cambridge on March 1, on the occasion of the opening of the Law School and Squire Law Library, the Medical School, the Sedgwick Memorial Museum, and the Botanical Laboratory.

* * *

DR. STOPFORD BROOKE will lecture on "Shakespeare's Plays" at University College, London, on March 3, 10, 17, and 24, at 8 p.m.

* * *

AT the London School of Economics, Prof. Patrick Geddes will lecture on "Cities and their Culture-Resources, Actual and Incipient," on March 3, 10, 17, and 24, at 6.10 p.m.; Prof. Westermarck (Helsingfors), on "Early Custom and Morals," on March 1, 8, 15, and 22, at 6 p.m.; and Prof. Ernst von Halle (Berlin), on "Trusts, their Development and Influence," on March 8, 11, 15, and 18, at 8.30 p.m.

* * *

THE REV. THOMAS MOORE, M.A., will lecture on various points connected with the Education Acts, at the Church of St. Anne and St. Agnes (Gresham Street, E.C.), on March 2, 9, 16, and 23, at 1.15 p.m.

* * *

PROF. W. A. POTTS, M.D., M.R.C.S., L.R.C.P., will address the Childhood Society at the Sanitary Institute (72 Margaret Street, W.) on "The Protection of Feeble-minded Children during and after School Age," on March 3, at 8 p.m.

* * *

THE first International Congress on School Hygiene, with the patronage of his Royal Highness Prince Ludwig Ferdinand of Bavaria, M.D., and under the direction of a large International Committee representing every civilized country of the world, will be held at Nuremberg on April 4–9 (as already intimated) An English Organization Committee has been formed, with Sir T. Lauder Brunton as President, and Dr. James Kerr (Parkes Museum, Margaret Street, W.) as Honorary Secretary. Addresses will be given by Prof. Hermann Cohen (Breslau) on "What has Ophthalmology accomplished for School Hygiene, and what still remains to be done?"; by Prof. Axel Johannessen (Christiania) "On the present Position of School Hygiene in Norway"; by Dr. Le Gendre (Paris) "On the Personal Health of the Teacher, and its Influence on the Scholars"; by Dr. Sickinger (Mannheim) on "Organization of the Elementary-School Population according to the Natural Working Capabilities of the Children"; by Dr. Liebermann (Buda-Pest) "On the Duties and Preparation of the School Doctor"; and by Prof. Heuppe (Prague) on "Prevention of Infectious Diseases in School." Details will be discussed

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in the sections. There will be a large and comprehensive Exhibition, including all that pertains to educational work and school structures and furnishing. The membership card costs one guinea.

* * *

THE University of Wisconsin will celebrate its jubilee at Madison in June this year.

Honours.

ON the occasion of the celebrations in connexion with the centenary of the death of Kant, the University of Königsberg has conferred the honorary degree of Doctor of Philosophy on Dr. Edward Caird, Master of Balliol, in recognition of his distinguished services to philosophy.

* * *

THE Senatus Academicus of the University of Edinburgh have resolved to confer the honorary D.D. degree upon the following:—The Rev. Andrew Hutton Drysdale, M.A., Morpeth; the Rev. John Anderson Graham, M.A., missionary, Kallimpong, India; the Rev. John Forbes Watson Grant, M.A., Edinburgh; and the Rev. Robert Dykes Shaw, M.A., B.D., Edinburgh.

And the honorary LL.D. on Samuel Henry Butcher, D.Litt., LL.D., lately Professor of Greek in the University; the Right Rev. John Dowden, D.D., Bishop of the Episcopal Church, of the diocese of Edinburgh; Sir Charles Norton Edgecumbe Eliot, K.C.M.G., H.M. Commissioner and Commander-in-chief for the British East Africa Protectorate, &c.; the Rev. Robert Flint, D.D., LL.D., lately Professor of Divinity in the University; Prof. Alexander Macallister, F.R.S., M.D., D.Sc., LL.D., Cambridge; Mr. John William Mackail, M.A.; the Right Hon. John Morley, O.M., M.P., F.R.S., LL.D., D.C.L., &c.; the Right Hon. Andrew Graham Murray, P.C., K.C., Secretary for Scotland; Sir George Reid, R.S.A., LL.D.; and Dr Hannis Taylor, Alabama, U.S.A.

* * *

THE Senatus Academicus of St. Andrews University has resolved to confer the following honorary degrees:—

LL.D. upon Erskine Beveridge, Dunfermline; Sir Charles Gage Brown, M.D., London; Prof. A. H. Keane, late of University College, London; Dr. John Newport Langley, F.R.S., Professor of Physiology, Cambridge; Sir John Leng, M.P., Dundee; and Hew Morrison, M.A., F.E.I.S., Librarian, Public Library, Edinburgh. And

D.D. upon the Rev. J. Vernon Bartlet, Professor of Church History, Mansfield College, Oxford; Rev. Alex. Gosman, Principal of the Congregational College, Melbourne; Rev. James Martin, Gask, Auchterarder; Rev. William Morrison, Edinburgh.

* * *

THE *Athenæum* hears from Montreal that M. J. J. Jusserand, French Ambassador at Washington, is to receive the honorary degree of LL.D. from McGill University in recognition of his services to English literature.

* * *

MR. H. J. MACKINDER, M.A., Director of the London School of Economics and Reader in Geography at Oxford, has been elected to a Studentship at Christ Church.

Endowments and Benefactions.

SOUTH WALES UNIVERSITY COLLEGE has received £25 from Sir R. Owen Anderson, Edinburgh, for the college building fund; an additional scholarship from the Brecon Scholarship Committee; and various valuable additions to the Museum of Natural History.

* * *

OXFORD CONVOCATION has accepted Mr. Philip H. Walker's offer of £1,200 for a studentship in Pathology. The studentship will be worth £200 a year, and tenable for three years. It is not confined to members of the University, and is open without limitation of age or sex.

* * *

BY the death of Mr. Edward Latham, a bequest under the will of the late Rev. Henry Latham, Master of Trinity Hall, falls to the University of Cambridge—namely, £2,841 Consolidated stock of the North-Eastern Railway, £1,291 Consolidated stock of the London and North-Western Railway, and 208 100-dol. Ordinary shares of the Canadian Pacific Railway, with £582. 15s. 8d. in cash. It will form "a fund for the purpose of giving assistance, under certain conditions, to members of the University or to their widows or children."

* * *

QUEEN'S COLLEGE, Belfast, has received £2,000 from Mr. Frederick Purser, Fellow of Trinity College, Dublin, to found a fellowship in memory of his brother, the late Prof. John Purser.

* * *

THE Aberdeen Divinity Professors, whose normal salary has for some time been falling short, are promised an augmentation under the will of the late Mrs. Stephen Wilson, North Kinmundy, Aberdeenshire—amount not yet stated.

* * *

MR. HAYS HAMMOND has given 50,000 dols. to the Sheffield Science School at Yale University, to complete the laboratory, to which he gave an equal sum a year ago.

* * *

THE University of California is reported to have received over £100,000 for a library, under the will of the late Mr. Charles F. Doe, of San Francisco.

Scholarships and Prizes.

TWELVE Junior Scholarships for boys, offered by the Drapers' Company, tenable in the day classes of the East London Technical College for two years (£15 a year while holder is fourteen to sixteen, £20 when over sixteen, together with exemption from the college tuition fees), and open to candidates between fourteen and sixteen on September 1, 1904, will be awarded on the result of the final examination for Intermediate County Scholarships commencing on June 27. Forms of entry from the Clerk to the Drapers' Company, Drapers' Hall, Throgmorton Street, E.C.; to be returned by May 14.

* * *

THE last day for receiving application forms for the L.C.C. Junior County Scholarships (to be awarded in July) is March 12.

* * *

UNIVERSITY COLLEGE, LONDON, announces for session 1904–5 (1) three Andrews Scholarships (entrance), £30 each—examination May 10, 1904; (2) West Scholarship in English, £30—examination September 21, 1904; (3) Campbell Clarke Scholarship in English Language and Literature, about £40—apply to Secretary of the College by April 30 (examination May 10, 1904); (4) Bucknill Scholarship (Medicine, entrance), £30 a year for four years; two exhibitions, 60 guineas each (Medicine, entrance); and two exhibitions, 80 guineas each (Anatomy and Physiology)—apply to Secretary by September 17 (examination September 20–21, 1904).

Appointments and Vacancies.

THE Provost and Senior Fellows of Trinity College, Dublin, will proceed to the election of a Professor of Botany in succession to Dr. E. P. Wright (resigned) on March 19.

* * *

THE Council of Trinity College, Cambridge, will elect a Birkbeck Lecturer in Ecclesiastical History on April 22. Graduates of Cambridge or Oxford are invited to apply to the Master of Trinity by March 22.

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MR. E. B. SARGANT has resigned the Directorship of Education in the Orange River Colony to become adviser on education to Lord Milner.

* * *

DR. H. KENWOOD has been appointed Professor of Hygiene at University College, London, in succession to the late Prof. Corfield.

* * *

MR. C. H. REILLY, M.A., Lecturer at King's College, London, has been appointed Roscoe Professor of Architecture in Liverpool University, in succession to Prof. Simpson.

* * *

MR. GAILLARD LAPSLEY, Lecturer on History at Pennsylvania University, has accepted a Lectureship and Fellowship at Trinity College, Cambridge.

* * *

MR. J. J. E. DURACK, B.A. (Sydney). B.A. (Research, Camb.), has been appointed Demonstrator in Natural Philosophy at King's College, London.

* * *

THE REV. DONALD JONES, B.D., Lecturer at Lichfield Theological College, has been appointed Principal of Bede College, Durham. He is succeeded by the Rev. C. A. Cherrington, B.A., assistant master and chaplain of Birkenhead School.

* * *

MR. WILLIAM SHARPE WILSON, M.A., youngest son of a distinguished teacher now retired (Mr. Robert Wilson, M.A., Deer, Aberdeenshire), and Lecturer in English at the Emperor Alexander's Institute of Engineers and English master at the two foremost classical schools in St. Petersburg, has been appointed Lector of English in the University of St. Petersburg, in succession to Mr. Charles E. Turner, who held the post for forty years.

Literary Items.

MR. T. FISHER UNWIN appeals to such as possess "private documents and diaries illustrative of the bad old times, or would write down in simple language their recollections," to send them to him for incorporation in a projected volume. "Tradesmen's bills and private housekeeping accounts of the 'Hungry Forties' would be of interest and useful for comparative study." Any documents sent to Mr. Unwin would be copied and returned by him if desired.

* * *

MR. HENRY FROWDE is just issuing a volume on "The Titles of the Psalms," in which Mr. J. W. Thirtle claims to produce the lost key to their interpretation. The book "is believed to represent an entirely new departure in Biblical criticism."

* * *

MESSRS. A. & C. BLACK will publish during the month Mr. Dudley Kidd's book, "The Essential Kafir," with 100 page illustrations "taken in Kafir kraals far removed from civilization." Mr. Kidd has spent a dozen years among the various Kafir tribes, and the work is opportune.

* * *

MR. KEITH THOMAS announces a volume on "Hellenism and Macedonia" by Dr. N. Kasasis, Rector of the University of Athens, who was recently here to represent the state of affairs in Macedonia. Dr. Kasasis treats the Macedonian question as only one part of the question of Hellenism.

* * *

THOSE that like their novels to keep them on the tenterhooks of expectation will be gratified to learn that Mr. Fisher Unwin is publishing "The Filigree Ball," by Anna Katherine Green—"a mystery equally difficult of solution" with the author's "Leavenworth Case."

* * *

MR. ALEXANDER GARDNER, Paisley, announces an English version of George Buchanan's "Baptistes" (John the Baptist) by the Rev. A. Gordon Mitchell, the minister of the parish where Buchanan was born (Killearn), and translator of Buchanan's "Jephthes."

* * *

MESSRS. CASSELL have permanently enlarged *Work* to 32 pages, without altering the price—good news to all interested in handicraft.

* * *

WE welcome the *Cambridge University Press Bulletin* of notes on books. The first number (January 15) is introduced by a very interesting "Historical Sketch of the Cambridge University Press" by Mr. J. W. Clark, M.A., Registrary of the University.

* * *

THE *Extensionist* (3d., No. 1, February) reports in full the inaugural meeting of the Central Association of University Extension Students held on January 6. It "will probably be published quarterly." We hope it will find encouragement to appear at shorter intervals.

* * *

SIR ISAAC PITMAN & SONS have started (February 17) a new penny weekly journal, the *Teacher*, devoted to primary education. It proposes to aid teachers "not only in preparing for examinations, but also in the practical work of the school." It promises well, and we wish it all success.

* * *

THE first number of *Technics* (January) offers varied and substantial matter, with liberal and effective illustration. It gives high promise of real usefulness to technical students and of interest to general readers. "Charlottenburg" is described (with good illustrations) by Prof. Dalby. In the winter *Semester* of 1902–3 there were 4,378 students and hearers, and an actual teaching staff numbering 402.

* * *

THE *Contemporary Review* for February contains Sir Oliver Lodge's Presidential Address to the Teachers' Guild (January 12).

* * *

THE *English Illustrated* of February—a charming number—has an interesting article on "The Educational Ladder" (with illustrations) by Hugh B. Philpott. The "Birthday Portraits" of George Meredith, Dr. Garnett, and Dr. Furnivall are very good.

* * *

THE *Modern Language Quarterly* completes its sixth volume, "viresque adquirit eundo."

* * *

IN the February issue of *Cornhill* Prof. Tout gives a comprehensive and instructive review of the life and work of Mommsen. We quote one far-reaching (though poorly expressed) remark: "The habit of relying upon even the best of modern books as infallible or inspired is not one calculated to promote intelligent study, and entirely fatal to any tendency towards first-hand original investigation."

* * *

Page's Magazine (February) contains an interesting article by Mr. C. Alfred Smith, B.Sc., A.I.E.E., describing the power station of Birmingham University, with plenty of good illustrations. A second paper will deal with the foundry and forge, the huge laboratories and workshops (main buildings), and the detail equipment of the mining and metallurgical sections.

* * *

MATHEMATICIANS will be interested in two papers in the *School Review* (University of Chicago Press) for December last on "Mathematics and the Co-ordination of Mathematics and Physics in Secondary Schools" (with racy discussion) and "The Unification of Mathematics in the School Curriculum."

* * *

THE January number of the same able review is filled

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with the proceedings of the Seventeenth Educational Conference of the Academies and High Schools affiliating or co-operating with the University of Chicago. The Departmental Conferences (Astronomy, Biology, English, Geography, German, Classics, History, Mathematics) include a great variety of suggestive papers.

General.

The *Yorkshire Herald* (February 4) congratulates the Rev. H. E. Ketchley, Rector of Barton-le-Street, on the unique regularity of attendance at the village school. "The figures for the last four years range from 99·0 to 99·4. Can this be beaten, or even approached, in the whole country?" How is it done? "The energetic rector has made it his duty to act practically as attendance officer in the parish." "And a most efficient attendance officer, too"—evidently, on the figures quoted.

* * *

A new Wesleyan Training Institution, with the Rev. Thomas Cook as Principal, has been established at Cliff College, Curbar, in Derwent Valley, "not to produce theologians or scholars, but trained Bible students, men 'mighty in the Scriptures' and skilled in applying truth to the common lives of men."

* * *

A brass tablet, placed in Didsbury College Chapel (St. Paul's Wesleyan Church) by the family of the late Rev. W. B. Pope, D.D., for twenty years Theological Tutor in the College, President of the Conference (1877)—"Theologian Mystic, Saint, a Master in Israel"—in memory of their distinguished father, was unveiled (February 12) by the President of the Wesleyan Conference (Dr. Moss).

* * *

The Aberdeen University Edinburgh Association entertained as their guests at dinner (February 5) a notable trio of teachers—three brothers—Dr. George Ogilvie, late Head Master of George Watson's School for Boys, Edinburgh; Dr. Alexander Ogilvie, late Head Master of Gordon's College, Aberdeen; and Dr. Joseph Ogilvie, Rector of the Church of Scotland Training College, Aberdeen.

* * *

Wallingford Grammar School (Berks) is adopting the principle of co-education. The boys' and girls' schools have just been amalgamated.

* * *

It is announced that twenty-four teachers (all women) lost their lives in the recent fire at the Iroquois Theatre, Chicago, and six more are reported missing.

THE TEACHING OF THE MOTHER TONGUE.

By Prof. J. W. Adamson, B.A.

At the Evening Meeting of the members of the College of Preceptors on February 20, the Rev. J. B. Blomfield in the Chair, Professor Adamson, of King's College, London, read the following paper:—

It is a commonplace of psychology that familiarity with a system of general signs, such as language, is essential to mental development in its higher aspect, and it is easily seen that the child who has learnt to use his native speech has appropriated, however unconsciously, much of the garnered knowledge of his people, their modes of thought, and schemes of ideas. On these grounds alone it would seem that the claim of the mother tongue to foremost rank as an instrument of education is inexpugnable. Yet, in fact, modern Europe waited till the seventeenth century (a veritable seed time of fruitful educational ideas) before there arose an effective demand for the admission of the vernacular into the sphere of school studies. The vigorous sense of nationality which is reflected in the literary achievements of England and of France in that century, and the instinct which then established the great literary societies dedicated to the mother tongue in Italy, France, and Germany, reappear as characteristic of the educational reformers of the time in their demand that school-children shall be *taught* their native speech. At the century's beginning a practical schoolmaster like John Brinsley urges the point, and much of the charlatan Ratke's right to fame rests upon his plea that every German child shall remain at school until the ability to read and write German is acquired. Comenius repeats and reinforces the plea, giving it a general application; the chain is continued in France by Messieurs of Port Royal, and later in Germany by Thomasius and Francke. During the last decade of the century John Locke reproved his countrymen for their neglect of the English language and showed them how it might be taught.

Notwithstanding his prepossessions, Locke devotes more attention to method in its application to language teaching than to any other branch of knowledge, and, the serious omission of literature excepted, his remarks on the teaching of the mother tongue are especially full and of the greatest value for practice at the present moment.*

Our subject may be conveniently considered under the divisions Composition, Grammar, Reading, and Literature, although, measured by the time to be devoted to them, these are not all of equal rank.

English Composition.

The term "Composition" is to be interpreted freely as the framing of articulated language, spoken no less than written. The drawing of an arbitrary line between the two forms has resulted in making written composition one of the most unsatisfactory subjects of school study. The reason is simple: once regard composition as essentially a pen-and-ink business, and its postponement till the pupil reaches the age of eleven or more is likely to follow. If success is to be attained, composition must begin in the *oral* exercises of the kindergarten and of the very youngest forms of the school. It is matter of common experience that a child who begins formal composition late, and as a thing written, will, when writing, violate the fundamental rules of grammar and the principles of even the baldest kind of expression. On the other hand, the convenience and adaptability of the oral exercise render it possible to correct the most serious errors and to form some standards of speech before writing begins. Locke suggested that, as the art of speaking well is to be got by practice,

> "it might not be amiss to make children, as soon as they are capable of it, often to tell a Story of any Thing they know; and to correct at first the most remarkable Fault they are guilty of in their Way of putting it together. When that Fault is cured, then to shew them the next, and so on, till one after another, all, at least the gross ones, are mended. When they can tell Tales pretty well, then it may be the Time to make them write them. The Fables of Æsop, the only Book almost that I know fit for children, may afford them Matter for this Exercise of writing English, as well as for reading and translating, to enter them in the Latin Tongue."

The procedure in these first attempts at composition could not be better described: first, the subject-matter must be quite familiar; secondly, the exercise is to be entirely by word of mouth; and, thirdly, faults are to be corrected systematically, beginning with the most general. Shyness and inability to keep ideas steadily before the mind are the chief hindrances at the outset, even when the matter of the story is well within the children's powers, and it is, therefore, a good plan to begin with what is called "Reading a picture." A large picture (lantern-slides answer admirably) is set up before the children, who are encouraged to describe what is portrayed; the versions are compared, some faults are noted at more or less length, others just glanced at, and the teacher gives a "fair copy," which he may or may not write upon the blackboard, as circumstances direct. The picture should represent a familiar scene, or, at least, its component parts should be familiar, and its subject of a kind to appeal to children. The great thing is to stimulate talk and make it easy; from that point of view pictures of movement are usually more easily interpreted, and lend themselves to narrative, which is an easier *genre* than description.

"Reading a picture" is for beginners; those who have gained a little facility may repeat a story which has been told them, or which they have read; older children may be asked for an oral account of a game, a walk, of a book read, or of a lesson heard. In all cases the teacher will find it helpful to take written note of the errors which are common in the narratives of different children, with the view to obeying Locke's injunction. Connected speech might be made more the habit of the school than is often customary, and the opportunities for oral composition correspondingly multiplied. For example, the indispensable repetition of work might in a measure be secured if it were the rule to begin a lesson by requesting two or three scholars to state the substance of the previous corresponding lesson; an oral summary by pupils at the close of a lesson is perhaps less unusual. When the practice of foreign schoolrooms in this respect is contrasted with our own, the latter is usually explained by the assertion that *by nature* the English boy is less articulate than the French or German. But, as the English youngster is generally vocal enough in the playground, and forcible also there on occasion, the explanation seems to be one of those convenient generalizations made expressly to palliate our own mistakes.

Practice in properly articulated speech, examination in and repetition of lessons, are not the only advantages accruing: oral summaries so

* See "Thoughts on Education," section 189, and compare sections 168, 171, 172.

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stated by the pupils discover their point of view more effectively than can a jerky, monosyllabic cross-examination, besides giving them an active share in the work and the teacher's voice a salutary rest.

Children who have been trained to oral composition from the beginning can dispense with those very dull and purely formal exercises with which many text-books would have the scholar commence written composition. Thus, grammatical subjects, for the most part quite unconnected, are stated, and the pupil is asked to add appropriate verbs or predicates, or *vice versa*. Sometimes a hotch-potch of sentences is printed, the exercise consisting in the insertion of pronouns or other "parts of speech." Many of the points raised by devices of this sort will have been anticipated and dismissed in the oral work

The subject-matter of these first written exercises will not greatly differ from that of the purely oral stage, except, perhaps, that the repetition of school lessons will be more frequently attempted, in order to associate training in expression with as much of the school work as may be contrived. The leading rule is that the topic proposed should be familiar, so that the stress of the task shall lie not in what is to be said, but in the manner of saying it. Some teachers read an anecdote or short story to the class, and require the pupils to reproduce it on paper; but the plan usually fosters a slavish, literal imitation in the children, who do their utmost, first, to retain as many of the actual words of the book as they can, and, secondly, to repeat these on paper, without much regard for the scheme of the composition as a whole. Children share with most illiterates an almost superstitious respect for printed matter as such: they are less likely to make the mistake of verbal imitation when the story is told orally by the teacher in his own words. It may seem inept to turn a good jest into *corpus vile;* but the reiteration, or attempted reiteration, of a tale whose point turns upon a joke often gives glimpses into a pupil's mind which a whole term of demure "schooling" would fail to offer. Such revelations are, surely, precious by-products of the process!

A story carries its own arrangement with it, and a lesson repeated in the order of its delivery would conform to its scheme in the teacher's mind; but when exercises not narrative are set the question of arrangement of matter, however familiar, becomes an essential part of the composition. When the children are first called upon to undertake work of this kind a few lessons should be given at the blackboard, teacher and class working together, first, to set down a skeleton outline, and, next, to fill this in; later, the children may be helped by the outline alone written upon the blackboard.

Locke glanced at one of the most common defects of children's writing when he marked as a stage in their advance the power "to join in a continued coherent Discourse the several Parts of a Story, without bald and unhandsome Forms of Transition (as is usual) often repeated." Probably most teachers are familiar with the young writers who cover their papers with chains of co-ordinate sentences and phrases whose links are made of the words "And so," or an equivalent. The remedy lies in requiring short sentences with a sparing use of conjunctions at first. When the scholars can readily express themselves in this *staccato* fashion a lesson at the blackboard should show how several short sentences may be woven into a period. At this stage help may be got from grammar and from formal exercises designed to drive home the use of certain locutions. For example, the boy finds it anything but easy to employ pronouns without ambiguity, and the teacher will be assisted in clearing up the difficulties if the pupil knows something of the corresponding grammatical terminology. Again, failure to introduce appropriate conjunctions suggests as a remedy those formal illustrative exercises whose purpose would now be obvious to the pupil, whereas they would only repel him if proposed independently and at the outset. Similarly, at a later stage exercises in the nature of "missing word" puzzles may be profitable, if set only occasionally: passages of some length, not unrelated sentences, are put before the children, with blanks in which are to be written the right epithet, connective word or phrase, and so on.

So far, our chief concern has been expression, invention being at first attendant on that. Locke has a lively passage in this connexion which one may be pardoned for quoting:

> "Do but consider what it is, in making a *Theme*, that a young Lad is employ'd about; it is to make a Speech on some Latin saying; as *Omnia vincit amor;* or *Non licet in Bello bis peccare*, &c. And here the poor Lad who wants knowledge of those Things he is to speak of, which is to be had only from Time and Observation, must set his Invention on the Rack, to say something, where he knows nothing; which is a sort of *Egyptian* Tyranny, to bid them make Bricks who have not yet any of the Materials. And therefore it is usual in such Cases for the poor Children to go to those of higher Forms with the Petition, *Pray give me a little sense;* which, whether it be more reasonable or more ridiculous, it is not easy to determine. Before a Man can be in any Capacity to speak on any Subject, 'tis necessary he be acquainted with it; or else it is as foolish to set him to discourse of it, as to set a blind Man to talk of Colours, or a deaf Man of Musick. And would you not think him a little crack'd, who would require another to make an Argument on a moot Point, who understands nothing of our Laws? And what, I pray, do School-boys understand concerning those Matters which are used to be proposed to them in their *Themes* as Subjects to discourse on, to whet and exercise their Fancies?"

Locke is speaking of the theme in Latin, but his strictures apply quite as well to all who, being "a little crack'd," require children to write upon abstract topics and other matters outside their knowledge and sympathies.

Composition need not be confined invariably to prose: a study of the mechanism of a verse such as would from time to time occur in the older pupils' literature lesson might occasionally be closed by the request that all should try to write a similar verse. Failure would at least put the writers in a position partially to appreciate verse which is good.

Paraphrase may be easily overrated as an aid to independent expression, while its effects on taste may be the reverse of desirable; there is a great deal to be said in favour of Ascham's opinion that

> "such turning of the best into worse is much like the turning of good wine out of a fair sweet flagon of silver into a foul musty bottle of leather, or to turn pure gold and silver into foul brass and copper."

It is useful, no doubt, as a test of the writer's grasp of the original, and it exercises him in the use of synonyms and so helps him to *copia verborum*. But the price will be much too high if it makes him believe that expression is indifferent and that his own brass and copper are equivalent to the fine gold of his copy. It may be thought that the argument suggested a moment ago for inducing boys to pen bad verse tells also in favour of inadequate paraphrase; but here the difference of form (paraphrase usually being in prose and of verse) is, I submit, material. Paraphrase is least objectionable when it is oral and not too premeditated.

English Grammar.

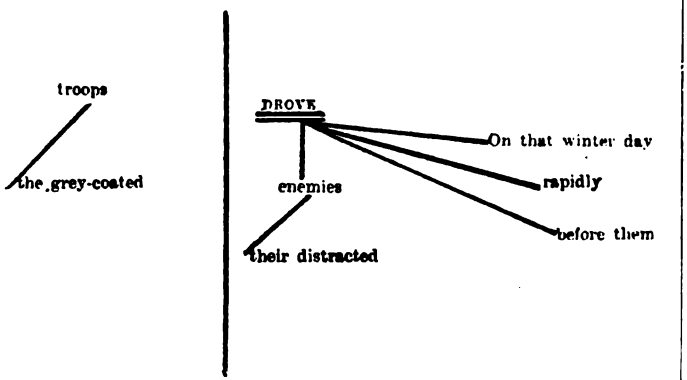
Should the vernacular grammar be included as part of the teaching of the mother tongue? If Locke were followed here, it should not. "There is more stir a great deal made with it than there needs," says he, "and those are tormented about it, to whom it does not at all belong: I mean Children, at the Age wherein they are usually perplexed with it in Grammar Schools." The direct reference is again to Latin; but the context shows that the remark applies to grammar study in general. This is to ignore that grammar, as a body of general principles which *may* be established inductively, is capable of yielding gymnastic similar to that which science affords, and with the advantage in the case of grammar that it needs no laboratory, and that the teacher has ample apparatus who is equipped with chalk, a blackboard, and brains. Once established, its principles can be used as criteria in dealing with composition exercises; for pupils whose study of language will extend beyond the native tongue there is much to be said in favour of giving them their earliest notions of the philosophy of speech through the familiar idiom, even where (as in the case of English) the grammatical field is restricted, and no very effective advance can be made until comparison with the forms of another language is possible.

But experience should warn us that the teaching of grammar may be made deadly dull. For example, little interest or intellectual nutriment could be derived from the old and possibly obsolete plan of making children learn from a grammar book rules which they were afterwards to apply in parsing. Of the many defects of the plan the most serious was its failure to take advantage of the boy's not inconsiderable knowledge of his own language. At the age when grammar lessons are possible, he is familiar with, and can use as an instrument of expression, the sentence, which is the true unit of thought; it is more in accord with his own spontaneous process of learning to commence with a whole, the sentence, and pass thence to the parts, the single words, than to follow the contrary direction. The rule of instruction, "Analysis first, then synthesis," is of general application: in this particular case it means that grammatical analysis should be made the basis of parsing. But teachers are so far agreed in opinion on this head that it is superfluous to labour the point.

Analysis of sentences replaced the older parsing drill as the earlier exercise, partly on the ground that the latter was mechanical: it is not always remembered that grammatical analysis may easily minister to the same Juggernaut of the class-room. Text-books almost invariably suggest that the sentence should be dismembered and the scraps stowed in certain rectangular pigeon-holes labelled "subject," "predicate," "extension," "completion," &c. Still worse, pupils frequently begin such an exercise by drawing and labelling their pigeon-holes before examining the sentence to be dissected; then, if labels and sentence do not correspond very well, the rectangular arrangement on the boy's paper tends to become an inflexible mould into which the unlucky phrases must be run. The effect is to stereotype the pupil's notions of a sentence, and he will identify, say, the indirect object, on grounds as purely mechanical as those on which his grandfather selected a possessive case Each sentence should be considered and treated on its merits, and the pupils should be persuaded that the sentence in general is a living expression of variable form, and not a dead uniformity. A flexible *schema* which makes this possible may be seen in Sir Joshua Fitch's "Lectures," the parts of the sentence and their descriptions being arranged in two columns after the manner of a parsing-table.

For graphic self-explanatory work at the blackboard the following device is recommended; it is intended to convey to the eye the interdependence of the members of a sentence, and the relation of each to each. No technical terms are employed, and no superfluous divisions are made: features which do not correspond to a particular sentence are, in that case, omitted. For example, the sentence: "On that winter day

the grey-coated troops rapidly drove their distracted enemies before them" would stand thus :—



The verb, as the pivot of the sentence, is made prominent. The long vertical line divides subject from predicate, the short vertical line unites the transitive verb with its object; an oblique line sloping from left to right indicates a phrase in adverbial relation, a similar line sloping from right to left marks the adjective, or adjectival phrase—conventions soon learned and easy to remember. Before a boy undertakes a parsing exercise he should analyze the sentence in some such graphic fashion as this at the head of his paper, or on the blackboard. If he cannot analyze his sentence, he cannot parse its words; if he analyzes it *so*, the common vexatious blunders in parsing are inexcusable.

When the value of grammar as mental gymnastic is in question it is customary to say that the study secures in this respect for young pupils what formal logic makes possible for their elders. But it must be said that grammar, as frequently taught, encourages very illogical habits of thought. Such teaching is marked, for example, by entirely premature desire for definition, oblivious of the truth that definition is only adequate when it represents considerable knowledge: the consequence is that pupils are made to learn either pretended definitions ("a noun is a name of a person, place, or thing") or such entirely inadequate definitions as those which commonly do duty for the verb. So long as children's knowledge is very imperfect and their powers are very immature, so long may they be excused from trying to define in set terms.

An even greater evil than premature definition is the over-classification which is a craze with some text-book writers. The "potential mood" does not crop up so often to-day as in the past: one used to wonder why, if "Tom can work" is in the potential mood, "Tom cannot work" was not in the impotential mood. But here is a classification of adverbs, set out in the majesty of Roman numerals and heavy type, which may be seen in a text-book at this moment in use:—"Adverbs are of I. Time, II. Place, III. Manner, IV. Degree, V. Measure, VI. Number and Order, VII. Mood—(1) Affirmative, (2) Negative, (3) Probability and Doubt—VIII. Cause. Interrogative Adverbs, many Compound Adverbs." Passing by the doubtful nature of this division when judged by logical standards, what possible advantage can accrue from making children learn it? Why not call the thing an "adverb," and have done with it?

The grammarian's mania for labelling and classifying is evident also in the attribution of "person" to nouns, albeit these are invariably said to be of the "third person," a third which, however, does not imply a first or a second. Again, the beginner is almost always invited to commit the fallacy of cross-division by making three classes of nouns—common, proper (*i.e.*, not common), *and abstract*. In this case, too, the youngster usually proposes to himself a question in metaphysics in order to determine whether a given noun is abstract or not. If grammar is to make good the claim to be a training ground for serious thinking, it must forgo trivialities such as these.

What place should historical English grammar occupy in the school? Practically, of course, this question, like so many others, finds its answer in the circumstances of the individual school, the public examinations with which it is associated, the after-career of most of its pupils, and the like. But where the teacher is a free agent it seems best to confine the regular systematic study of English grammar on its historical side to those pupils for whom "scholarship" is a practicable goal—that is, for the few. But all may derive both interest and concrete profit from being told of some of the conclusions at which scholars in this field have arrived. It is therefore very advisable that the teacher should be a student of historical English grammar; I would like to add that a knowledge of Latin grammar should be compulsory on all teachers of vernacular grammar, not so much for the sake of the knowledge itself as for the standard of grammatical science and facility in its use which ought to be implied.

English Reading.

From a paper on the teaching of the mother tongue it is impossible to omit all reference to the child's first steps in the art of reading, although the subject requires a paper to itself. The special difficulties encountered by the English child were very fully set forth some forty years ago by Prof. Meiklejohn; it is almost as long since he and Mr. Sonnenschein showed how these difficulties may be minimised. Briefly, the great hindrance to the child's rapid and intelligent progress is our anomalous spelling, more particularly of the common everyday words which belong naturally to a child's vocabulary. Messrs. Sonnenschein and Meiklejohn met this, in their "English Method of Teaching to Read," by a careful selection and arrangement of words consistently spelt: these words constituted the language in which the beginner dealt at first, words of irregular spelling being introduced gradually. Expectation of the contrary notwithstanding, the result was not artificial: the language was natural and adequate, and the whole course, anomalies included, was comprised in three thin booklets.

Spelling has acquired a fictitious importance which invites the assertion of heterodox opinions. As a usual thing, correct spelling is the mark of the literate person; incorrect, of the illiterate: he who reads and writes much rarely spells amiss. If a boy, whether at Eton or in a Board school, is illiterate, it is a comparatively small, nay a natural, thing that he should spell badly: our anxiety ought to be concerned not with his spelling, but with his illiteracy. Make him read, make him write; but to help the illiterate to conceal his unregenerate state by teaching him spelling, as such, looks like a species of dishonesty. It is not a contradiction to the foregoing to urge that, save as an examination test, no passage should be set for dictation which has not been previously prepared as to its spelling: Cicero says somewhere that faults as well as correct forms are ingrained by exercises.

Word building can furnish but small assistance in the teaching of spelling, since it deals with regular forms whose spelling is, as a rule, not hard to come by; but, as showing how words acquire precise modification of meaning through definite change of form, the practice has its place in teaching language, the vernacular as well as other. There is scarcely occasion, however, for the many manuals of the book maker: they are liable to several obvious abuses; for most teachers they are superfluous, and word building is best learned, not as one more distinct "subject," but *obiter*, during lessons on composition, reading, grammar, and so on.

It is to be regretted that the overcrowded time-tables of most schools do not permit practice in the art of reading aloud to pupils above the youngest. It may be made a valuable auxiliary to acquiring facility, variety, and appreciation in using the mother tongue if the reading matter be of the right kind. In any case, the bad phrasing and breathlessness so often heard when older pupils are asked to read might be prevented if, when they have occasion to read aloud from text-book or exercise, it should be understood that good reading is invariably expected.

Without question many of the school reading books in circulation to-day are far less suitable for their special function than were the "readers" of twenty or more years ago. Some, otherwise suitable, are swollen in bulk by pictures of little merit, on which the children bestow no more than the brief, cursory glance which they deserve. Then there is a whole class of school readers whose employment is doubly mischievous—namely, the so-called "science" readers and others which deal with *Realien* of a scientific, or quasi-scientific, sort. These commonly teach their subject in the way which is not the best, thus proving foes in their own household, while they are intruders in the domain of literature, robbing children during the reading lesson of time and opportunity rightfully belonging to letters and not to science. Offenders of a similar kind are the periodicals, mere *réchauffés* from the newspapers, which are said to be suitable for school use. The art of reading aloud, as part of the instruction in the mother tongue, is surely before all things literary; and the reading matter intended as the exercise ground in the art should belong to sound literature, and not to Mr. Blank's lucubrations on carbon dioxide or the last opening of Parliament. Where the scholars come from bookless homes, or belong to families destitute of literary culture, the school fails in a manifest duty if it keeps them poring over reading matter of the kind to which allusion has been made.

This is a subject which seems to touch the credit of teachers very closely. The well nigh universal habit of spending much time daily in looking at printed matter is a monument to the success which has followed instruction in reading. But is it a monument of which we may legitimately feel proud? When the stuff commonly read is scrutinized, how much of it advances knowledge or culture or reflects the interests or amusements of a really civilized people? At its best such stuff serves as an anodyne to thinking—a function shared by dram-drinking; at its less than best it inspires most kinds of vulgarity and meanness. It is very significant that the generation which consumes garbage so freely has debased the word "literature" to a synonym for printed matter. The teaching of the mother tongue is frustrated by reading of the kind in question, and the selection of reading books, from which many scholars get their earliest ideas about books in general, demands very conscientious care. Thought and graceful expression are, of course, impossible in primers and books made for the mechanical stage of learning to read: they ought to be required above that level.

English Literature.

The formation of good literary taste in the pupil—indeed, of æsthetic taste generally—is on the educator's side largely a matter of suggestion; he provides abundant opportunity for contemplation of the good and excludes, as far as he can, contemplation of the bad. Many a child has developed the sense of literary appreciation through free access to a good library: a school which can permit its pupils to browse at times amidst

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a collection of standard books of romance, travel, history, biography, and poetry will thereby do more for literary culture than will many set lessons having that purpose in view. Nor need the books be chosen expressly from what is thought to be the child's point of view; instinctively he reaches out to the years beyond his own, and, provided that there is *a* meaning for him in what he reads under the conditions supposed, we need not be too anxious as to his understanding his author. After all, the range of a great writer is not to be straitly defined: who shall say that there is no room within it even for the little child's interpretation?

Growth of literary appreciation as the consequence of having free access to good books is, of course, too casual to allow the schoolmaster to trust to it alone. For the few it is enough; the many require set opportunities and direct teaching if they are to attain a modest, serviceable level of regard for literature. In some schools these gather round the reading book; in others they are concentrated about the classics set for public examinations. It is to be feared that public examining bodies do not sufficiently realize their duties and opportunities in this respect; otherwise they would take pains to vary the kind of reading prescribed and look for knowledge of large masses of the author's text rather than acquaintance with the book maker's notes. Shakespeare is frequently set to children whose age is too young, and he is set too often to the exclusion of other and standard writers who appeal more to many boys and girls; worst of all, he is read in over-annotated editions, many of which are reflections of the traditional mode of editing a Latin or Greek classic for school use. If the study of English literature is to form an effective part of the English child's instruction in the mother tongue, and if English literature is to confer upon English children in general the benefits bestowed by humane letters, then we must frankly recognize that not all boys and girls are intended by Nature or force of circumstances to become philologists or scholars in the technical sense. The many can only get the training which is desired for them by dint of reading large tracts of their authors, such notes alone as are absolutely needed for elucidation accompanying the text. In the case of some authors, of whom Sir Walter Scott is one, the most effective editing for school use would consist in directing scholars to begin not at chapter i. (still less at the preface), but at chapter ii. or thereabouts; the best editor, as well as annotator, for school-children should be their own teacher. With discretion, he may also be their best critic and æsthetic guide. The qualification is necessary, since these things only too readily lend themselves to cant; but an honest and profitable conversation between teacher and class is imaginable where the boys tell the teacher what most pleases them in their classic, and he, in turn, makes the like confession to them. Older pupils may state the grounds of their pleasure, thus co-operating with the teacher in establishing standards of taste in their minds.

If the publishers and book makers of the past twenty years have not improved the school reading book, they have given us a number of extremely well chosen anthologies of English verse suitable for school use, a service which teachers of an earlier generation would have much appreciated. Happily, all learning by heart has not quite departed from the schoolroom, and these books give abundant material for recitation, a practice of great value in teaching the mother tongue. What has been said about English school classics as a whole of course applies to passages selected for recitation. A not uncommon mode of expounding a passage chosen for the purpose is to go through it piecemeal, giving synonyms for the difficult words, but ignoring the *tout ensemble*. The chief difficulty the boy often experiences does not reside in individual words, but in the character, drift, and scheme of the composition in its entirety. Thus it is often best to open an exposition lesson by treating the gist of the passage at some length: it will be an added advantage in this connexion if the teacher has the art of reading aloud.

"This I find universally neglected," said Locke, "and no care taken anywhere to improve young Men in their own Language, that they may throughly understand and be Masters of it. If any one among us have a Facility or Purity more than ordinary in his Mother Tongue, it is owing to Chance, or his Genius, or any thing rather than to his Education or any Care of his Teacher."

The twentieth century re-echoes the complaint of the seventeenth. At a recent conference of educational associations many speakers declared that ignorance of the mother tongue prevented the scholarship winner from the elementary school taking that place in the secondary school which was expected of him; on the other hand, we are told officially that in not a few secondary schools "the boy has no acquaintance with the English language as used by those who know how to use it, and it is not surprising that when he attempts to express himself on paper or orally he has little skill or facility." (Mr. Headlam's Report.)

Yet it is not so in French or German schools, whether primary or secondary. Much of the foregoing paper is no more than an inadequate description of what is done daily in the French schoolroom, with admirable results, as is generally admitted. Until the experiment has been fairly tried and the English boy has been subjected to a similar regimen, we ought not to acquiesce in the assertion that by nature he is less capable of learning to use his mother tongue with ease and precision than are his young friends beyond the Channel.

Dr. R. P. Scott considered that paraphrase was a very powerful instrument in the hands of the teacher for instilling into the minds of his pupils a sense of literary appreciation, provided that great care were exercised in the selection of passages. The piece to be paraphrased should be of a high standard of literary merit, and before attempting the paraphrase the pupils should be made familiar with the idea in the mind of the author and should steep themselves in the atmosphere of his thoughts. After very carefully correcting the exercises the teacher should, if possible, take each pupil individually and explain to him where he had failed to keep in touch with the thought of the writer. This opportunity of going over the work of the pupil after the teacher himself had thoroughly mastered the difficulties, and of explaining where the pupil might have translated the author better, was an effective means of establishing a personal touch between teacher and pupil. If a teacher selected a passage from Milton for paraphrase, he would not, of course, expect his pupils to render Milton in return, but it would be found that the amount of Milton which the pupils had learned in the process would be of considerable value. As a means of encouraging literary effort on the part of his pupils he had found it very useful to keep what he called a "golden book," in which paraphrases of exceptional merit were recorded. With regard to the question of spelling, he thought that in the case of most boys the best thing to ensure correct spelling was plenty of good reading.

Mr. Langler said that two things were necessary to enable a pupil to make a suitable paraphrase: he must be thoroughly acquainted with the subject dealt with in the passage, and he must have a good vocabulary at command. Oral lessons in such subjects as Nature study afforded a good opportunity for acquiring a large vocabulary and the power of expression.

Mr. Potter thought that the chief advantage of ability to paraphrase was that it enabled a pupil to render with much greater freedom a translation into English from a modern foreign language.

Mr. Wood said that his own opinion as to the depreciation of the literary value of English Readers coincided with that of the lecturer. With regard to the question of paraphrase he contended that the higher the literary merit of a passage the more difficult it was to paraphrase it.

Miss Salter said that in teaching spelling she had found it a good plan to divide words into syllables and make the pupils pronounce each syllable distinctly, care being taken that the pupils understood the meaning of the words.

Mr. Gibbard agreed with the lecturer that the reproduction by the pupils of a story related by the teacher formed a very effective method of teaching English composition. He considered that Science Readers were quite unsuitable for use as ordinary English Readers, as they contained a number of scientific terms the explanation of which occupied considerable time and properly belonged to the science lesson.

Professor Adamson having replied to the remarks of the various speakers, a vote of thanks to the lecturer concluded the proceedings.

ADAM MARTINDALE.

A COUNTRY SCHOOLMASTER OF THE COMMONWEALTH TIMES.

By Prof. Foster Watson, University College, Aberystwyth.

I.—Adam's Schools and Schoolmasters.

Adam Martindale's Autobiography is a charming book, and ought to be better known. It was first published from the British Museum MSS., in 1845, by the Chetham Society of Manchester, under the sympathetic editorship of Canon Parkinson.

It is, perhaps, easier to learn of the lives of great reformers than of those who manfully lived along the current of the age. It is particularly difficult to find details of the struggle to live in the work of teaching in such an age as that of the great Civil War. So forcible and incisive is Martindale in the account he gives of his career that it will be possible to give almost entirely in his own words the parts that relate to his own school-days and his own schoolmastering experiences.

Martindale's father was a yeoman who got into difficulties through becoming surety. The sketch of his life is, therefore, particularly interesting as showing the sort of bringing-up which poorer people were able to give their children. The following is Adam Martindale's quaint description of his life from the sixth to the seventh year of his age:

When I was near six years old, one Anne Simpkin, who was one of my sureties at the font, being grown low in the world, but not in goodness, out of a real principle of conscience to perform her promises and engagements for me at my baptism (as I verily believe), bestowed an A B C upon me; a gift in itself exceeding small and contemptible, but, in respect of the design and event, worth more than its weight in gold. For till that time I was all for childish play, and never thought of learning. But then I was frequently importunate with my mother that had laid it up (thinking I would only pull it in pieces) to give it into mine own hands, which, being so small a trifle, she accordingly did; and I, by the help of my brethren and sisters that could read, and a young man that came to court my sister, had quickly learned it and the primer also after it. Then of mine own accord I fell to reading the

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Bible and any other English book, and such great delight I took in it, and the praises I got by it from my parents, which preferred my reading before any other in the family, that I think I could almost have read a day together without play or meat, if breath and strength would have held out; and thus it continued to the end of the first seven years of my life.

In 1630, when Martindale was seven years old, he was sent to the Free School at St. Helen's, in Lancashire—two miles from his home. This distance he had to travel twice a day, but even at that early age he counted it nothing, such was his "innate love to learning." He had many hindrances in his school course. To quote his own words, these were:

First, many teachers (five in fewer years). Secondly, these none of the best. Thirdly, a tedious long method there and then used. Fourthly, dullards in the same class with me having power to confine me to their pace; for when the lowest, who was presumed to be weakest, said *Satis*, the ablest must take no further. Fifthly, many sad providences making great gaps in this seven years, as will appear hereafter.

It is difficult to find descriptions of country schoolmasters of the period, and Martindale's account is interesting. I give it at length:

My first master was a young ingenious spark having a good full school, but so bad a husband [manager] that he quickly spoilt all and left us.

A worse followed him, viz., an old humdrum curate, that had almost no scholars, nor deserved any, for he was both a simpleton and a tippler. He and I parted when I was learning mine accidence without book.

The third I went to was a woman (daughter to a famous schoolmaster), that had some smattering of Latin. She could teach us to construe the Latin examples of the English rules called the *Parvulæ*, at least such as were rendered into English, and the *Qui mihi* and Lily's rules by the help of a construing book, and put us sometimes to read English; so that with her I did something better than quite lose my time, but not much. Next I was placed under another schoolmaster at S. Helen's Chapel, who was brought up at the then famous school of Winwick, whence multitudes were almost yearly sent to the University, but they were usually of good years before they were fitted, the method where they were taught being very long. This master of mine had the Winwick* method right enough, and was scholar sufficient for me then; but he was a very silly and unconstant man, always making new laws, insomuch that if a boy had been absent a day or two, he knew not how to behave himself for fear of transgressing some new ridiculous order or other. Nor was this the worst, but being a married man, with a charge, and very poor, he lay open to impressions from such as could fee him well to carry partially amongst his scholars, so as the whole school could not but be aware of the grossness of it.

Adam's father being poor, he came in for unfair dealing, and induced his father to have him removed to Rainford—a nearer school, but a costlier one, "because no free school as the other was." But the money was well laid out, for the master was diligent enough in looking to us not only as to grammar-learning, but as to our profiting in the catechetical grounds of religion. He also took notice by himself and admonitors (employed to that purpose) who was absent from the public ordinances, or carried themselves unsuitably there: for the latter no excuse must serve, and for the former it must be a good one. His worst fault while he stayed there was, that he was humorous and passionate, and sometimes in these moods he would whip boys most unmercifully for small or no faults at all. He once bestowed a most severe correction on me for nothing in the world but defending myself from a great sloven (much older, taller, and stronger than myself) who abused me intolerably and incessantly with a besom as had been fit to have been given to one that had picked a pocket. This I concealed; yet at last it came out, and mightily offended my father, but the schoolmaster crying *peccavi*, and promising to do so no more, all was well again. He afterwards succeeded my former master at S. Helen's, whither I followed him.

Adam Martindale supplies us with a full account of his schoolwork:

As for the proficience I made under my master 'twas this: He received me when I was learning in *As in præsenti* and Cato, and instructed me for prose in Corderius, Æsop's fables, Tullie's Offices, epistles, and orations, together with Aphthonius for Latin in prose, and the Greek Grammars of Camden first, and Clenard afterwards, together with a Greek Catechism, and lastly the Greek Testament (for I proceeded no further with him); and for poetry in Mantuan, Terence, Ovid's Epistles and Metamorphoses, Virgil, and Horace. The rhetorics he read to us were Susenbrotus first and Talaeus afterwards. Mine exercises were usually a piece of Latin (of which he himself dictated the English) every day of the week, save Thursdays and Saturdays; and besides somewhat weekly as I rose in ability, first a dialogue in imitation of Corderius, or Pueriles Confabulatiunculæ, then an epistle wherein I was to follow Cicero, though (alas!) at a great distance. Then themes (as we called them) in the way of Aphthonius, consisting of many parts and taking up one side of half a sheet pretty thick written, and (towards the latter end) good store of verses on the back side, most hexameters and pentameters, but some sapphics and adonics. All that were presumed by their standing able to discourse in Latin were under a penalty if they either spoke English or broke Priscian's head; but barbarous language, if not incongruous for grammar, had no punishing but derision. These were the orders we were subject to at teaching hours; yea, though we had liberty by twos to go forth of the school upon our necessary occasions, real or pretended, and sometimes (when the humour took him) he would tie us to them at our times for play.

At fourteen years of age various relations suggested to Adam's father that the boy had better be put to a trade. They pointed out, as is the custom in all ages, instances in which youths had made no advantage of their learning "though they had been brought up to it so long as to be fit for nothing else." The father allowed the boy his choice. He returned, after a short absence, to his old master to find that "he that used to take care of our souls was become an enemy to his own." He had become a drunkard.

I have known him [Adam goes on to say] pick a quarrel with his choicest scholars, so as they could not please him with giving an account of such a little word as *et* or *que* (though as able as himself to do it), and if they escaped with his displeasure and disgracing in the school, without punishment, it was as well as like.*

Adam accordingly, for the fifth time, changes school, and returns to Rainford, to the new schoolmaster who had come there. Not only had this master (Martindale scarcely ever mentions names—a caution which it was desirable to observe in some matters in his age) been taught at Bolton School, but he had been, as report had it, in the University for five years, and pronounced Greek, as Adam is careful to observe, "in the University manner."

Adam describes him as "a man made for a schoolmaster, and most excellent to give the finishing stroke to a country scholar." Here is the full description of himself and his methods:

He was skilful in the derivations of words, teaching us many that we could not find in any lexicon. Nor was he slight in examining us about the dialects, not only in poets but even in the Greek testament; wherein he made us to observe the Hebraisms, Latinisms, and idioms. I heard once a confident scholar say, the Greek testament is perfectly free and clear from all dialects; but it is a great mistake, as our master would have told him, and is plain in the best edition of Pasor.

He taught us also to make Greek exercises, in prose and verse; and both in these and what we made in Latin he expected not only congruity but elegancy. He spoke very good Latin to us in a constant way; put us to take out our lessons ourselves, and, in examining them, he stood not so much upon parsing (as they called it) or scanning of verses and proving them, to which he found us well enured, as upon rhetorical tropes and figures: to fit us whereunto, he removed us out of Talaeus into Farnaby; laughing at Susenbrotus as an old drill piece, which calleth tropes as well as schemes by the name of figures. He was also very notable at teaching us to observe all allusions in profane authors to the Sacred Scriptures, insomuch that anything leaning that way should hardly pass his observation. I remember very well when we were upon the story of Deucaleon's flood in Ovid's Metamorphoses, he took notice of those words "*Ubi nuper Ararat.*" as thinking it a strange allusion (whether intended or accidental) to the mountain of Ararat, upon which Noah's ark rested.

This schoolmaster also removed to St. Helen's, and, Adam adds, was the "only schoolmaster that within the time of my observa-

* Canon Parkinson's note: "This shows that Winwick, the great ecclesiastical foundation of Lancashire, was as famous at that time as a scholastic establishment as it was as a school of theology, the rectors at that period, and indeed for many generations, having as many as five or six curates, whose labours were extended throughout the neighbouring district. The Universities were then the only high road to literary distinction, and the school of Winwick one of their chief feeders from this part of the kingdom. *Such as failed, from various causes, to attain this object of their ambition, became useful schoolmasters in the country around.*"

* Canon Parkinson's note: "As much as could be expected."

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tion went away thence a sober man." Adam followed him to St. Helen's for two years, and then at sixteen years of age was "allowed" as ready for the University. "But the worst was, the University was not so ready for me; wars being coming on that soon after turned Oxford (whither I was designed) into a garrison and many scholars into soldiers."

Adam, therefore, instead of going to the University, began teaching.

(*To be continued.*)

REVIEWS.

The Remodelling of Humanity.

Mankind in the Making. By H. G. Wells. (6s. Chapman & Hall.)

Following up "Anticipations" and "The Discovery of the Future," Mr. Wells now republishes his recent series of periodical articles "presenting a general theory of social development and of social and political conduct." In noticing his speculations on the discovery of the future, we asked (May, 1902): "What next?" Here is the answer, and it is quite in accordance with our anticipations. "It is an attempt to deal with social and political questions in a new way and from a new starting-point, viewing the whole social and political world as aspects of one universal evolving scheme, and placing all social and political activities in a defined relation to that; and to this general method and trend it is that the attention of the reader is especially directed." The object, it must be acknowledged, is highly laudable; and it is encouraging to find a new co-ordinator of the activities of the universe ready to assume Herbert Spencer's mantle. We trust that Mr. Wells has secured the primary object of his undertaking—"his own mental comfort." How far the work will contribute to the building up of "The New Republic" is another matter. The aspiration is lofty, and large allowance must be made for the weakness of human equipment. Mr. Wells is modest—in terms. He confesses that "he is remarkably not qualified to assume an authoritative tone in these matters, and he is acutely aware of the many defects in detailed knowledge, in temper, and in training these papers collectively display." Yet he does himself the injustice of leaving not a few of such defects unremoved, though readily removable; and for the rest he sacrifices his common sense freely on the foundations of his New Republic.

That New Republic must obviously be a cast-iron despotism; for where else is there any alternative to what Mr. Wells, with curious lack of insight, calls our "base and shifty opportunism in public and social matters"? If that be so, then it will be rather more than "a few years" before his system shall "have become a great world movement, conscious of itself and consistent within itself." There will be plenty of time to consider "the problem of birth supply"—a sufficiently serious problem, in truth: repudiated, tabooed, yet insistent, and soluble only on the basis of researches that are still in their infancy. "Our success or failure with that unending stream of babies"—seven per minute—"is the measure of our civilization; every institution stands or falls by its contribution to that result, by the improvement of the children born, or by the improvement in the quality of births attained under its influence." The proposition, if somewhat strained, is painfully true in a sense; but in the meantime the solution is, as we have indicated, in the hands of experts, and mere popular discussion is of very subordinate value.

Given the babies, what is to be done with them? "School is only one necessary strand in an enormous body of formative influence." It is the strand, however, that we are more immediately concerned with; and Mr. Wells's views of the teacher emerge into interest. Passing over incidental remarks for the moment, we quote a solid passage that will speak for itself:

> Scolding the schoolmaster, gibing at the schoolmaster, guying, afflicting, and exasperating the schoolmaster in every conceivable way, is an amusement so entirely congenial to my temperament that I do not, for one moment, propose to abandon it. It is a devil I have, and I admit it. He insults schoolmasters and bishops in particular, and I do not cast him out; but, at the same time, I would most earnestly insist that all that sort of thing does nothing whatever to advance education, that it is a mere outbreak of personal grace-notes so far as this discussion goes.

Such a profession might well justify the immediate despatch of the book to the waste-basket; but then we should probably be charged with lack of "humour"! Let us turn to particulars about "this most lamentable profession"—"an ill-trained, ill-treated, poorly respected, and much abused (*peccavi!*) profession." What of reading and English grammar? This:

> In the elementary and lower secondary schools ill-chosen reading-books are scampered through and abandoned all too soon in favour of more pretentious "subjects," and a certain preposterous nonsense called "English grammar" is passed through the pupil stuff which happily no mind can retain. . . . It is no good mincing the truth about all this sort of thing. These devices are resorted to by the school teachers of the present . . . because they are utterly ignorant, and know themselves to be utterly ignorant, of the reality of the subject, and because they have to humbug the parent and pass the time by unreal inventions. The case is not a bit better in the higher-grade schools. They do not do so much of the bogus teaching of English, but they do nothing whatever in its place.

If "we all know how atrociously English is taught," what is to be done? "I know very little of the practical teaching of English, my own very fragmentary knowledge of the more familiar *clichés* of our tongue was acquired in a haphazard fashion"—such is Mr. Wells's confession (page 146), and evidently enough a true, and not a merely "humorous," confession. Yet he is ready with counsel:

> The sane course is to begin by establishing the proper way to do the thing, to develop a proper method and demonstrate what can be done by that method in a few selected schools, to prepare and render acceptable the necessary class-books, and then to use examination and inspector, grant-in-aid, training college, lecture, book, and pamphlet to spread the sound expedients. We want an English Language Society, of affluent and vigorous people, that will undertake this work.

Yes, some people want the moon to play with; and amateur reformers are ready enough with large general proposals that comfortably overlook the practical difficulties. If Mr. Wells and his Society are to take charge of this business and render the new class-books "acceptable," and tie down the language and the people, they have need to be very "affluent and vigorous people" indeed—to say nothing of the results of such a cast-iron procedure. "Surely this enterprise of text-books and teachers, of standard phonographs and cheaply published classics, is no fantastic impossible dream!" Very well—this is a free country—let Mr. Wells proceed. Are there, indeed, no good text-books, no good teachers, no "cheaply published classics"? Could any suggestion be more justly termed "fantastic"? Mr. Wells has hit upon the right word, for once at least.

What of science? "I must confess," says Mr. Wells (page 205) in classical English, "that a lot of the science teaching that appears in schools nowadays impresses me as being a very undesirable encumbrance of the curriculum." Indeed:

> The science of the modern school pretends merely to be a teaching of useful knowledge; the vistas, the tremendous implications of modern science are conscientiously disregarded, and it is in effect too often no more than a diversion of school energies to the acquisition of imperfectly analyzed misstatements about entrails, elements, and electricity, with a view—a quite unjustifiable view—to immediate profitable hygienic and commercial application.

As if "the vistas" can be possibly discerned till the eyes have been educated! As if "useful," "profitable" knowledge were to be contemned! "I know of no school Arithmetic," says Mr. Wells, "which does not groan under a weight of sham practical work, and that does not, with an absurd priggishness, exclude the use of algebraic symbols." The two authors of mathematical books that have chanced to secure his approval ought to be proud of the unique eminence he accords them. But Mr. Wells is to set things mathematical universally right by the agency of "a suitably authenticated committee" (page 226)—"on the basis of Prof. Perry's syllabus, perhaps." Prof. Perry will note that "perhaps," and look to his laurels.

What of language teaching? As for classics:

> There is scarcely a work left in Latin or Greek that has not been translated into and assimilated and more or less superseded by English, French, and German works; but the schoolmaster, heedless of these things, still arrests the pupil at the old portal, fumbles with the keys, and partially opens the door into a ransacked treasure chamber.

There, forsooth, is a Daniel come to judgment! And as for modern languages:

> The language teaching of to-day is deliberately, almost conscientiously, not for culture. It would, I am sure, be a very painful and shocking thought indeed to an English parent to think that French was taught in school with a view to reading French books. It is taught as a vulgar necessity for purposes of vulgar communication.

We forbear from further exemplification of Mr. Wells's treatment of teachers and of the subjects they handle. He carries the discussion up to the colleges and the Universities; on a

former occasion we quoted his picture of the hapless "ordinary Oxford, Cambridge, or London B.A."; and we leave the interested reader to follow the ingenuous speculations in the pages of the volume. The results are summed up in a single sentence (page 227):—"The more one looks into scholastic affairs the more one is struck not only by the futility, but the positive mischievousness, of much of what passes for educational liberalism"—a conclusion stated in reference to the school, but apparently no less applicable to college and University. It has not even the merit of originality. One could bear drastic handling if the outcome were to be some definite measure of improvement. But Mr. Wells's speculations are so far removed from facts that no tangible remedy is apparent. His further notions about political and social influences and about "thought in the modern State" do not attract us. He submits, indeed, "that it is only by payment of authors, and, if necessary, their endowment in a spacious manner, and in particular by the entire separation of the rewards of writing from the accidents of the book market, that the function of literature can be adequately discharged in the modern State." How spaciously indeed does an author deserve to be endowed when he discusses a practical and most important national question in large and vague terms with scant knowledge of the real facts and with open contempt for the whole of the existing methods and machinery!

INSTITUTIONS OF ISLAM.

Development of Muslim Theology, Jurisprudence, and Constitutional Theory. By Duncan B. Macdonald, M.A., B.D., Professor of Semitic Languages in Hartford Theological Seminary. (5s. Routledge.) (The Semitic Series.)

Prof. Macdonald approaches his work with the trepidation of the scholar that knows the vastness and difficulty of his undertaking and measures it with the space available for his results; but students may, without apprehension, leave him to settle the score with Muslim specialists. He is also scrupulously careful to warn his readers that the work is incomplete; that Babism, the Shiite theology, the Ibadite systems, Turkish and Persian mysticism, the Darwish fraternities, and Muslim missionary enterprise are treated, if at all, in but meagre fashion. But one cannot have everything in three or four hundred pages, and what Prof. Macdonald aims at is not an exhaustive treatise, but a manageable introduction to a wide and varied field of learning; and he appends a select bibliography for the guidance of more advanced students. Again, while he handles the three branches of his subject separately, he properly emphasizes the fact that such separation is purely mechanical and for convenience only, and that the student will afterwards have to "labour to merge these three sections again into one another." For "we can never say in Islam: 'He is a great lawyer; he, a great theologian; he, a great statesman.' One man may be all three, almost he must be all three, if he is to be any one."

Prof. Macdonald takes the constitutional development first, as being the most concrete and simple aspect (pages 7 to 63). The statement is concise, the essential points being steadily disengaged. The relations of the Emperor of India, the Sultan of Turkey, and the Shah of Persia to Islam are specially interesting. The following anticipation of the development of the Brotherhood of as-Sanusi, founded by the father of its present head in 1837, with its centre at Jarabub, in the Eastern Sahara, between Egypt and Tripolis, and adherents all over the Muslim world, is somewhat startling at first blush, but, we should think, very remote from fulfilment:—

> So there has sprung up in Islam, in tremendous ramifications, an *imperium in imperio*. All the brethren in all the degrees—for, just as in the monastic orders of Europe, there are active members and lay members—reverence and pay blind obedience to the Head in his inaccessible oasis in the African desert. There he works towards the end, and there can be little doubt what that end will be. Sooner or later Europe—in the first instance, England in Egypt and France in Algeria—will have to face the bursting of this storm. For this Mahdi is different from him of Khartoum and the Southern Sudan in that he knows how to rule and wait: for years he has gathered arms and munitions, and trained men for the great *Jihad*. When his plans are ready and his time is come, a new chapter will be opened in the history of Islam—a chapter which will cast into forgetfulness even the recent volcanic outburst in China.

Next Prof. Macdonald deals briefly (pages 65 to 117) with the development of jurisprudence, struggling with two main difficulties—the overpowering mass of material and the perplexing strangeness of ideas. As to the latter point. "Muslim law prescribes everything that a man shall *do* to God, to his neighbour, and to himself: it takes all duty for its portion, and defines all action in terms of duty." Muhammad himself administered the customary law of al-Madina, tempered by his personal notions of equity and supplemented by legislative revelations. With his death legislation ceased, and the process of collecting, arranging, correlating, and developing began. Under the Arab dynasty of the Umayyads, ruling from Damascus, knots of difficulty were cut by the sword, and it was only under the Abbasids that definite and recognized legal schools began to form. Prof. Macdonald shows very clearly how the conflict of views at last issued in a limitation to four legal sources—Qur'an, tradition (prophetic usage), agreement, analogy—and to four schools, "all equally valid and their decisions equally sacred in Muslim eyes." The most notable figures, of course, are Abu Hanifa and Ash-Shafi'i—the former more remarkable for originality and keenness; the latter endowed with "a balance of mind and temper, a clear vision, and full grasp of means and ends that enabled him to say what proved to be the last word in the matter."

The main part of the book is occupied with Muslim theology (pages 119 to 287). Prof. Macdonald urges the student to hold fast three guiding threads, "which are woven distinctly through the web of Muslim religious thought."

> There is tradition (*naql*); there is reason (*aql*); and there is the unveiling of the mystic (*kashf*). They were in the tissue of Muhammad's brain, and they have been in his Church since he died. Now one would be most prominent, now another, according to the thinker of the time; but all were present to some degree. Tradition in its strictest form lives now only with the Wahhabites and the Brotherhood of as-Sanusi; reason has become a scholastic handmaid of theology except among the modern Indian Mu'tazilites, whom orthodox Islam would no more accept as Muslims than a Trinitarian of the Westminster Confession would give the name of Christian to a Unitarian of the left wing; the inner light of the mystic has assumed many forms, running from plainest pantheism to mere devout ecstasy. But in the Church of Muhammad they are all working still; and the catholicity of Islam, in spite of zealots, persecutions, and counter-persecutions, has attained here too, as in law, a liberty of variety in unity.

We need say only that Prof. Macdonald treats with complete fairness, in just proportion, and in lucid exposition the various views as they come forward in the kaleidoscopic play of Muslim thought, philosophical and theological, marking external influences (such as Aristotle and Plato) as well as purely native developments. Especially interesting is his fourth chapter, on the life, times, and work of al-Ghazzalli—"the greatest, certainly the most sympathetic, figure in the history of Islam." Much illustrative matter, with references, &c., is given in appendixes (pages 288 to 371); and there is a useful index. For the English student of the subjects treated the book is indispensable. It is a most scholarly performance, and the style is thoroughly popular in spite of all technicalities and of continuous condensation of material. It is to be hoped that Prof. Macdonald will one day handle each of his three subjects in independent works, with full scope to the learning he manifestly commands and is capable of expressing in attractive literary form.

SOCIAL ENGLAND IN THE MIDDLE AGES.

Mediæval England, 1065–1350. By Mary Bateson. (5s. T. Fisher Unwin. "The Story of the Nations" Series.)

Miss Bateson departs from the political point of view assumed in the other volumes of the series, and takes up the social standpoint, "supplying by illustration from contemporary accounts some of the characteristic detail which is apt to be crowded out in political histories." This seems a wholly fortunate choice: it gives us, instead of a more or less varied recast of familiar matter, a systematic presentation of many important aspects of the progress of civilization that have not yet found their way very freely into the ordinary history books. Miss Bateson says justly:

> Not the least truthful measure of progress lies in those superficial indications of civilization which are set aside as the province of social history. In the mediæval Englishman's domesticity there is an epitome of the life of the nation: English private life has its unity, its episodes and catastrophes, which reflect the shifting lights and shadows of the national story. The private history of kings and princes, nobility, clergy, and commons, has become now, with the progress of historical study, a theme more easy of treatment than it was a while ago. Changes in the social relations of the classes of men can now be traced, changes that have had their part in shaping the story of a nation, no less than the evolution of the agencies of government, the historic series of victories and defeats,

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gains and losses of territory, the happy or the luckless political chance, the fateful power of the point of time.

The volume is disposed in three nearly equal parts, each covering about a century—Norman Feudalism, 1066–1154; the Lawyers' Feudalism, 1154–1250; and Decadent Feudalism, 1250–1350. Miss Bateson boldly enters the palace, the castle, the abbey, the nunnery, the warehouse, the farmhouse; inspects the business going forward, fetches out the account books, and shows how the people lived their daily life. The matter is of extraordinary variety and interest, and the labour of bringing it together and marshalling it in systematic order must have been great and prolonged. The volume forms the necessary complement to the ordinary political narrative. A very full chronological table is appended, and there is a good index. A specially valuable feature is the illustrations, which number close on a hundred. The work is one of the ablest and most useful in the series.

The Logic of Arithmetic.

Lectures on the Logic of Arithmetic. By M. E. Boole. (2s. Clarendon Press.)

The dedication states that the preparation and publication of the volume were brought about by friendly pressure; and it would certainly have been a pity had the contents of its pages not become accessible to the public. It is not that the methods of the writer are unique: other equally earnest and able teachers have devised analogous, if not identical, systems, and have known how to make arithmetic and other mathematical subjects possess a living interest for their pupils, and how to enable children to realize that rules are by no means mere arbitrary formulæ to be learned with dull toil and used mechanically, but are built up intelligently as affording the direct means of obtaining desired ends. Good teachers will find in the new volume interesting confirmation of many of their own independent ideas, whilst the less gifted will learn from the authoress how they may make their own class lessons more instructive, more intelligible, and more adapted to awaken the interest and the inventive faculty of the scholar. It is not to be supposed that the series of lectures now published is intended to form a substitute for the regular courses and text-books: a term's interval may be allowed to elapse between consecutive lectures, but each is to be repeated with varied illustrations as often as may be deemed advisable. The several discourses are lively and original in character, and are eminently suitable for bringing vividly before the young the common sense involved in what they are studying. The types of illustration chosen by the writer are not all of equal excellence, but the power of improving on the less happy selections lies with the individual teacher, and may always be freely exercised. It is not quite clear how far Miss Boole would have children taught to accept rules on faith in the first instance, for she appears at times to presuppose a practical knowledge of the rule she is explaining; but, whatever her exact views on the point may be, it would seem preferable as often as possible to appeal to reason at the very outset.

"The Social New-Birth."

(1) *Die einheitliche Lebensauffassung als Grundlage für die soziale Neugeburt.* (Mk. 3.60. Beust, Straszburg; Lendorff, Basel.) (2) *Kennt die Bibel das Jenseits?* (Mk. 2.50. Reinhardt, München.) (3) *Orthodoxie oder Christentum?* (Pf. 80. Reinhardt, München.) (4) *Die Gottesherrschaft als welterneuendes Lebensprincip.* (Mk. 1. Reinhardt, München.) All four works by L. Reinhardt, V.D.M.

These volumes and *brochures* are good samples of the earnest and extensive activity of Herr Reinhardt in theological and social discussion. His object in (1) he states clearly and compactly, thus:

An die Stelle der *dualistischen*, innerlich unwahren, antik-heidnischen und mitteralterlich-orthodoxen Weltanschauung muss die biblisch-christliche und modern-wissenschaftliche, *einheitliche* Lebensauffassung gesetzt werden, welche von dem heidnischen Götterhimmel und dem kirchlich überlieferten Jenseits nichts weisz, sondern auf Erden (in der wirklichen Welt) das Reich Gottes oder die Herrschaft der göttlichen Natur- und Geistesgesetze zu verwirklichen sucht.

To sustain his thesis he enters into vigorous and learned expositions, philosophical (on the basis of subjective idealism), scientific (including detailed treatment of the biblical account of the Creation), and historical (through all the ages), and then applies his conclusions to ground "the social new-birth," or "re-birth"—"the being born again" (page 352). But it is not "the ordinary Socialism" that Herr Reinhardt has in view: it is something different from, and far more comprehensive than, political and other external reorganizations; he combines the inner and the external life in an indivisible unity and aims at a spiritual development of the social health (page 13). The "new spirit" that is to inform the individual and society ("die ganze menschliche Gesellschaft") is the spirit of truth; and truth means "the divine laws of Nature and of mind as unmistakably revealed to us in Nature, in history, in Jesus Christ, and in our own self-consciousness" (page 402). But the explanation needs explaining: the terms have different meanings for different persons. In a word, the general argument lacks cogency; but fullness of matter, scholarly research, earnestness of manner, and lucidity of style render the volume exceedingly interesting in details. Herr Reinhardt has closest affinity with Monistic and Unitarian views.

(2) deals with the negative and subordinate side of Herr Reinhardt's contentions. Through 94 pages (out of 184) he examines the teaching of the Bible on a future state, the immortality of the soul, and the various conceptions of conditions in a future life (Sheol, Hades, Purgatory, Heaven, &c.), and reaches negative conclusions. "Die Unsterblichkeit der menschlichen Seele ist der Bibel völlig unbekannt"; and not only so, but the Bible "kennt auch gar nicht denjenigen Begriff von der Seele auf welchem allein die angebliche Unsterblichkeit derselben beruhen kann." Next he enters into an inquiry as to the origin of the various views that he combats, and concludes with a survey of consequences of the recognition that his own opinions are established. The volume is intensely religious in tone, though the outlook is restricted to "the reign of God on earth" ("diesseitige Gottesherrschaft," page 178). But the argument is necessarily at the mercy of an interpretation of particular words and phrases specially open to the influence of individual bias of mind.

(3) and (4) are considerable *brochures*, enforcing the same doctrines in various aspects. It is to be noted that Herr Reinhardt's teaching, though largely, and indeed essentially, destructive from the general point of view in this country, is yet desperately reconstructive for a country where (he says) "jeder waschächte Sozialdemokrat ist Atheist" [(3), page 1]. His technical discussions must stand or fall at the bar of special scholarship; but his vigorous rejection of materialism and his perfervid earnestness for the universal control of human action by an indwelling spirit of religion (though looking no farther than to the present world) must be frankly acknowledged.

GENERAL NOTICES.

CLASSICS.

"Blackie's Illustrated Latin Series."—(1) *Ciceronis Cato maior de Senectute*, edited by G. H. Wells, M.A. (2s.) (2) *M. Tulli Ciceronis Laelius de Amicitia Liber*, edited by Rev. F. Conway, M.A. (2s.) (3) *The Fifth, Sixth, and Seventh Philippic Orations of Marcus Tullius Cicero*, edited by T. K. Brighouse, M.A. (Lond.). (2s. 6d.)

Every one of these volumes is an excellent addition to an admirable series, beautifully printed, artistically and usefully illustrated, and judiciously annotated. The introductions, which are interestingly written, amply serve to place the student in position for the matter of the text. The text itself has been carefully formed on the basis of the best critical results; and headlines indicate the subject of each paragraph. The notes are restrained, pointed, and markedly accurate. The exercises appended for retranslation have evidently been formed with great care of selection, and, under thoughtful direction, cannot but be extremely helpful.

(1) Sophocles: *Oedipous Coloneus*, with Commentary abridged from Prof. Sir R. C. Jebb's large edition. By E. S. Shuckburgh, Litt.D. 4s. (2) Demosthenes: *On the Crown*. Edited by William Watson Goodwin, Hon. LL.D. and D.C.L., Eliot Professor of Greek Literature (Emeritus) in Harvard University. (Cambridge University Press.)

These beautiful editions for school use need only be mentioned. If Dr. Shuckburgh err at all, it is on the safe side of fullness. Prof. Goodwin has abridged his large edition (1901), omitting the critical notes and adding necessary critical remarks as well as elementary explanations in the footnotes. The historical sketch and essays appended to the text supply all that is necessary "to an understanding of this masterpiece of oratory." Both are masterly editions and fine examples of printing and get-up.

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MATHEMATICS.

Spherical Trigonometry. By Daniel A. Murray, B.A., Ph.D., Instructor in Mathematics, Cornell University. (2s. 6d. Longmans.)

The brief course embraced in the present volume gives promise of being regarded by teachers as attractive and acceptable, and the work has the advantage of dealing with a branch of mathematics to which comparatively few writers have devoted their attention as authors. The chapters on the subject itself are preceded by a useful recapitulation of some of the important facts of solid and spherical geometry. In spherical trigonometry the text deals principally with such propositions as are necessary to enable the student to understand thoroughly how to solve triangles, both right-angled and oblique; how to determine the ordinary details relating to the inscribed, escribed, and circumscribing circles; and how to compute areas and volumes connected with the sphere. The indications of any way in which a subject may be applied to questions of practical importance is generally productive of increased interest on the part of the student, and this purpose will be served by the chapter on the elements of mathematical astronomy.

A Course of Pure Geometry. By E. H. Askwith, D.D. (Cambridge University Press.)

A valuable acquisition to the students for whom it is designed. It collects for them from the domain of modern geometry a long series of the most important propositions with their demonstrations, and it so treats the matter discussed that the touch of a master hand and the spirit of the true mathematician are everywhere evident. All the methods employed are those of *pure*, as distinguished from *analytical*, geometry; but many of the ideas that owe their origin to the growth of analytical investigation are freely utilized. It is impossible and unnecessary to enumerate all the subjects treated, but amongst them will be found the properties of triangles and of circles as developed in recent years, the concurrence of lines and the collinearity of points, the theories of projection, inversion, and reciprocation, and theorems dealing with inharmonic and harmonic ratios. Ample scope for practice is afforded in the sets of exercises placed at the end of each chapter, which are drawn chiefly from the papers framed for the Mathematical Tripos and for the college examinations.

A School Geometry, Part III. By H. S. Hall, M.A., and F. H. Stevens, M.A. (1s. Macmillan.)

An interesting continuation of the complete "School Geometry" in course of preparation by the well known authors. The subject is the Circle, and most of the elementary properties are demonstrated, as well as the simpler propositions relating to the circle in connexion with rectilineal figures.

Algebra, Part II. By E. M. Langley, M.A., and S. R. N. Bradly, M.A. (2s. Murray. Home and School Library).

Forms a sequel to a volume already noticed in these columns, and gives a very clear conception of the special algebra required by the Board of Education Syllabus (Second Stage). At the end of the course of study here provided the reader should be in a position to take up progressions. The chapter on Involution and Evolution brings out well the inverse character of the latter process, and gives also a short account of the nature and use of Pascal's triangle. The usual discussion of quadratics is supplemented by an interesting explanation of the *graphic* method of solving an equation of the second degree.

FRENCH READING BOOKS.

In *Toujours prêt* (2s., Marlborough) M. Toreau de Marney offers an "ideographic French reader, on modern scientific principles." The story, with type devices for emphasizing grammatical points, runs on one page, and grammatical processes are graphically represented on the opposite page, with explanations and suggestions for exercises. The vocabulary may be used as a key to the text or as a basis for conversation or composition. Some of the "graphs" had better be simplified by the teacher. An elaborate and suggestive presentation, with many useful elements.

Amis et Amiles and *Les Aventures d'Aiol*, as adapted from the "Chansons de Geste" and retold for the young in modern French by Mrs. J. G. Frazer, are combined in one term reader in the "Cours élémentaire Black" (6d.). Mr. F. B. Kirkman adds brief notes and a vocabulary.—A fresh addition to the "Cours moyen et supérieur Black" is Voltaire's *Zadig*, edited by Mr. Kirkman (6d.). On page 31, line 163, an accident to the type has left a grammatical blunder; and in line 153 *le* ought surely to be *la*.

In the series of "Arnold's French Reading Books," *Gil Blas in the Den of Thieves*, arranged from Le Sage, with short notes and vocabulary, by R. de Blanchard, B.A., B.Sc., Lic. ès L. (Univ. Gall.), reappears in a new edition (9d.); and *Richard Whittington* (Eugénie Foa) and *Un Conte de L'Abbé de Saint-Pierre* (Souvestre) together (1s.), and *L'Apprenti* (Souvestre) (1s.), edited by C. F. Herdener, B.A., also furnish good matter, with questions, grammatical exercises, and *thèmes*.

Mr. H. A. Guerber narrates graphically twenty-five *Contes et Légendes*, not of the most familiar class or not in the usual version, relying on the force of repetition (1s. 6d. Harrap, Modern Language Series). While the matter is attractive, the treatment is thoroughly effective. An exceptionally good general reader for little beginners.

Mr. W. G. Hartog's *Lectures et Conversations françaises* (2s. 6d., Rivingtons) provides some fifty lessons—anecdotes, sketches of French history and French life, and a few poetical pieces—"none of them too difficult to be read at sight by classes in the fourth and fifth year of instruction," with maps of France and Paris, followed by conversations and exercises upon the text. A very careful and serviceable book.

M. Jules Lazare, B. ès. L., has compiled and edited fifteen *Contes et Nouvelles* "des meilleurs auteurs contemporains" (1s. 3d., Hachette), adding a concise vocabulary and notes—a fresh and stimulating collection for moderately advanced pupils.—M. A. C. Poiré's *Carnet de Notes d'un Voyageur en France* (1s. 6d., Macmillan), "présente au lecteur anglais, et surtout au futur commerçant ou industriel, les traits caractéristiques qui peuvent l'intéresser." It is a French geography, with more particular reference to industrial, commercial, and agricultural aspects. The facts are plentiful, and the text will impress a special vocabulary.—Mr. R. L. A. du Pontet, M.A., in his *Poèmes choisis* (1s. 6d., Edward Arnold), offers an admirable "selection from French poetry, chiefly lyrical," for middle forms, with historical and metrical introductions, biographical notices, and brief notes.

ENGLISH LITERATURE.

The Indebtedness of Chaucer's "Troilus and Criseyde" to Guido delle Colonne's "Historia Trojana." By George L. Hamilton, A.M., sometime Fellow of Columbia University, Professor of Romance Languages in Trinity College, North Carolina. (5s. net. The Columbia University Press; Macmillan)

The volume is one of those post-graduate exercises in limited, but still important, literary investigation that are stimulated now more and more by some of the American Universities. It is a dissertation presented to the Faculty of Philosophy of Columbia University in fulfilment of one of the requirements for the degree of Doctor of Philosophy. What a purely literary exercise has to do with a degree in philosophy is one of the many inscrutable mysteries of degree conferment. However, Prof. Hamilton's inquiry exhibits much diligence in details, and presents results that are useful and often curious. It seems rather a pity, however, that he did not pay more respect to the Horatian maxim; for he tells us that "studies made subsequent to the writing of this dissertation upon the relations between versions of Benoit's work and the plagiary of Guido may lead me, at a later date, to modify certain statements." This confession of immaturity, however, together with incidental indications in the volume, need not weigh too heavily; for the book, so far as it goes, is a substantial contribution to the question. Once Prof. Hamilton has reached settled convictions on Guido, we hope he will resume his original plan, which was "to make an investigation of Chaucer's indebtedness to the French and Latin writers who were his predecessors in telling the story of 'Troilus and Criseyde.'"

Shakespeare. (1) *Hamlet*, (2) *Macbeth* ("The Student's Shakespeare"). Edited by A. W. Verity, M.A. (2s. 6d. and 3s.) (3) *Macbeth* ("The Pitt Press Shakespeare"). Edited by A. W. Verity, M.A. (1s. 6d.) (Cambridge University Press.)
(4) *Macbeth* ("The Blackfriars Shakespeare"). Edited by M. J. C. Meiklejohn, B.A. (1s. 3d. Meiklejohn & Holden.)

The first two volumes are primarily intended to meet the wants of students for the higher examinations in English, but they will be welcomed by all intelligent readers. The textual difficulties have been very fairly grappled with, in view of the editor's purpose, though many points are not raised at all, and some are restricted in handling. For school and college purposes, however, the notes are adequate, clearly expressed, and most helpful; and they are judiciously eked out by an appended glossary of the more troublesome words. Introductions and appendixes between them provide ample historical and literary apparatus. On the whole, we do not think that any better editions are available. (3) is a new edition on a less elaborate scale, and more suitable for younger classes. (4) shows vigorous and independent treatment. It discusses the plot and the characters, furnishes notes serviceably illustrative of the text, deals with the metre and with points of old or unusual grammar, and adds (among other matters) a select series of examination papers. All these volumes are excellently got up.

ENGLISH LANGUAGE.

(1) *Junior English Examination Papers.* By William Williamson, B.A. (1s. Methuen.) (2) *McDougall's Short Lessons in English Composition.* (6d.) (3) *A First Course of Essay Writing.* By J. H. Fowler, M.A. (6d. Black.) (4) *Hints on Essay Writing for Schools.* By C. H. Hodgson, M.A. (Relfe.) (5) *The Normal Guide to English Composition.* By Isabel F. Young, L.L.A. (3s. 6d. net. Normal Correspondence College Press.) (6) *Matriculation English Course.* By W. H. Low, M.A., and John Briggs, M.A., F.Z.S. (3s. 6d. Clive.)

(1) A passage for paraphrase or analysis is placed at the top of a page, and grammatical questions of various sorts follow, with a subject for an essay last of all. The questions are mostly useful and testing,

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but not a few are too comprehensive, and some might better have been omitted—who wants to know the masculine or feminine of "tibcat," "jenny-ass," "spawner," or "drone," or the possessive case plural of "he-ass," or even of "virtues"? (2) The explanations are simple and practical and the subjects are judiciously chosen and treated. The matters on the borderland of "grammar" and "rhetoric" might have been more fully utilized. (3) Mr. Fowler gives a good variety of subjects, with stimulating hints and useful cautions. His "suggestions to teachers" are admirable. An extremely well considered and serviceable work. (4) Mr. Hodgson furnishes examples of essays first in skeleton and then fully expressed; next a series of skeletons to be clothed with literary tissue; also additional subjects. His "hints" are all useful; but, while the work is very good as far as it goes, one would like more assistance towards the tissue-forming process. (5) A very comprehensive and sensible volume. Part I. deals very fully with grammatical and rhetorical usages, providing elements too frequently ignored or inadequately presented. Part II. supplies large outlines of essays on historical, descriptive, literary and critical, and abstract subjects; and Part III. gives "model essays" on the subjects of Part II., which will be helpful by way of comparison. (6) The outline grammar hardly seems to meet the quirks and quiddities of the Matriculation examiners, though sufficient for ordinary purposes. Here and there, indeed, one feels a lack of grip. The adjective-clause "is introduced by (1) a relative pronoun, the relative being used in a restrictive or defining sense"; then what sort of clause is it when the relative is "continuative" (or, as other people say, "co-ordinating")? It is strange that such a simple matter should be so generally mismanaged. The analysis is scarcely handled with sufficient firmness in detail; and, in "Act like a man," we should not advise a boy to parse "like" as "adverb of manner, modifying 'act,' and governing 'man' in the objective case." Part II. deals instructively with composition, paraphrasing, and *précis*-writing; only the preparatory sections should be much fuller. Still the book will be found very useful for its purpose.

HISTORY.

Mediæval and Modern History. Part II: *The Modern Age.* By Phi ip van Ness Myers, formerly Professor of History and Political Economy in the University of Cincinnati. (6s. Ginn.)

Mr. Myers now presents the revision and expansion of the latter part of his work, extending from the discovery of America down to the present time, and on the whole it may claim to share the favourable notice we recently gave to the former part. Having set forth summarily the various movements that ushered in the new age, he divides his four centuries into two unequal periods—the era of the Reformation and the era of the Political Revolution. The age of absolute monarchy, "the prelude to the Political Revolution," easily claims nearly as much space as the Reformation; and, when the French Revolution and the Napoleonic era have been described, just a fourth part of the pages is left to the nineteenth century. Mr. Myers has struggled very successfully with his limits of space, by careful selection of topics and precision of statement; and, if in numerous points we should complain of inadequate presentment of causes of events, we must yet acknowledge that he has done remarkably well. A very useful feature of the book is the judiciously selected bibliography appended to the chapters; and there are 13 coloured maps and 3 sketch maps.

A First Book of British History. By T. F. Tout, M.A., Professor of Mediæval and Modern History in the University of Manchester. (2s. 6d. Longmans. Historical Series for Schools, Book I.)

The Second Book of the series of three we have already noticed. The series is on the "concentric" system, and the present volume simply "aims at exciting a general interest in British history in the minds of boys and girls in the junior forms of schools," though "it is not meant absolutely for beginners." It gives a very good general view in an interesting way; but the causes of events are not sufficiently set out to make it substantial "history" teaching, and the language is often loose. We had rather see Prof. Tout employing his time and energy in more useful work—work that most writers of equally good elementary "histories" are not so competent to do, and that nee is very much more urgently to be done. There are 85 illustrations, 13 tables, and 25 maps and plans.

RELIGION.

Pagan and Puritan: The "Octavius" of Minucius. Freely translated by Arthur Aikin Brodribb. (George Bell.)

This little work—the only known work of Marcus Minucius Felix—contains two speeches on religion, one from the pagan, the other from the Christian, point of view, the latter being victorious. "Short as it is, this almost classical dialogue holds an important place in literature as the earliest extant defence of Christianity by a Latin writer—that is, if, as there is reason to believe, Minucius is prior to Tertullian." The date of the book may be placed in the later part of the second century, internal evidence pointing to the year 162 or 163 as the probable date of the argument reported in it. Mr. Brodribb presents a very readable translation, with an instructive introduction and some useful notes. The book is neatly got up.

The Biblical History of the Hebrews. By F. J. Foakes-Jackson, B.D., Fellow of Jesus College, Cambridge, and Hon. Canon of Peterborough. (Cambridge: Heffer. Edward Arnold.)

The author has "endeavoured to tell the story of Israel from a Biblical standpoint, in such a way as to bring into relief the progressive character of God's revelation to His chosen people." His task is a most difficult one; there are watchful lions on both sides of his middle path. At one end of the book the principle of "a gradual revelation from human ignorance to Divine knowledge" will be somewhat strained to support him when he is "compelled to appear to disparage the accuracy of certain records or the truth of certain beliefs"—say, the strict historicity of the three patriarchs of Israel. At the other end some critics may find weakness in the admission of the return from the Captivity. What Mr. Foakes-Jackson says of David may well receive a wider application: "he belongs to an age so different from the present that he is not easily understood." Those that are reasonably well acquainted with the conditions of the enterprise will certainly yield him a large measure of credit both for learning and for practical judgment. The volume is well written, and it will be very serviceable to general readers as well as to students in theology, for whom it is primarily intended.

EDUCATION.

The Teaching of English in the Elementary and the Secondary School. (1) By Percival Chubb, Principal of the High School Department of the Ethical Culture Schools, New York. (4s. 6d. Macmillan. "Teachers' Professional Library.") (2) By George R. Carpenter, A.B., and Franklin T. Baker, A.M., Professors in Columbia University, and Fred N. Scott, Ph.D., Professor in the University of Michigan. (6s. net. Longmans. "American Teachers' Series.")

Though both volumes bear the same title, and both are written by American teachers, all (except Prof. Scott) located in the same Eastern city, they are very different in tone and even in scope, and so seem complementary rather than exclusive. Mr. Chubb manifests a devouring energy which tends to overflow in rhetorical generalities and superfluities, and he seems somewhat confident in the teacher's power of diagnosis of, and prescription for, the child mind. He is aware that "we can be too ambitious; we can overfeed; we can overtrain and overstimulate," and he thinks "the only reliable safeguard is a sense of character values." But, if the teacher is capable of managing this part of her business, how is it that she needs so much detailed instruction on the way to teach English? The work deals with reading, literature, and composition—with the first two very thoroughly, with composition rather generally. We find no specific examples as in the other cases. The pupil's "linguistic conscience," indeed, "must at all times be kept sensitive" (page 177); but, assuming the existence of it, how? This absence of specific treatment probably arises from the fact that "we have come to believe that our prime task as teachers of composition and rhetoric is to bring home to our students how inevitably the art of writing and the science underlying it develop of themselves in and through the orderly, progressive practice of writing." Yes, but what do they develop to? This is one of the unthinking half-truths, all the more disastrous because deliberately held. Though discursive, diffuse, and incomplete, the book is earnest and vivacious, and its solid parts, resting upon considerable experience, will well reward perusal.

The professors, again, start with the aim of "recording and discussing theories with regard to elementary and secondary instruction in English now held by teachers and students of education." At once, however, they plunge into a review of "the long movement that has led to the breaking down of the theory by which all, or nearly all, systematic linguistic instruction should be given by means of Latin and Greek rather than by means of a vernacular"; and, not content with that, they go on to consider "the systems of instruction in the vernacular now in vogue in one or more of the countries of Continental Europe, with the hope of deriving some profit from foreign experience in analogous problems." It is all very interesting, to be sure; but it makes about a fifth part of the book somewhat remote from its proposed purpose—at all events, from a practical standpoint. The detailed exposition of methods, however, is very full, discriminating, and suggestive—by no means superseding Mr. Chubb's work, but more compact and precise and more cautiously guarded in expression. The section on "The Teacher and his Training," by Prof. Scott, deals with general and special qualifications of the teacher, "the philosophy of the assignment" (that is, "certain class-room procedures, the general object of which is to induce in the student a state of mind favourable to composition," especially the announcement of the subject, stimulation of interest in it, arousal of a desire to write upon it, suggestion of a method of procedure in writing, and precautions against wasted effort), and the business of essay correcting. The second of the three branches is the freshest; but they are all competently handled. The extent of the qualifications required may be usefully compared with our own practice. The whole work is much to be commended.

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The Teaching of Scientific Method, and other Papers on Education. By Henry E. Armstrong, LL.D., Ph.D., F.R.S. (6s. Macmillan.)

Prof. Armstrong has gathered together twenty-three of his papers on educational subjects from a number of journals in which they have appeared within the past twenty years—mainly of later date; and the round two dozen is completed by a poem on "The Conservation of Matter," by Mr. M. Solomon, inspired by the paper preceding it, and certainly not the least lively of the collection. We note with satisfaction two papers on "The Teaching of Scientific Method" which were first published in our own columns thirteen years ago. In the present arrangement the earlier articles are didactic, and appeal more to the general reader; the later are constructive, and appeal more to the specialist. Prof. Armstrong believes that, "in advocating the introduction of *scientific method* into schools, still more in advocating that teachers generally should have mastered the experimental method and be able to assume the attitude of the investigator," he will "command the support of few—simply because, at present, so few can appreciate what is meant by such expressions." For our part, then, we are decidedly of the "few"; but we are quite sure that the "few" are far more numerous than Prof. Armstrong thinks; and we should rather say the "extension" than the "introduction" of scientific method. Moreover, we fear that Prof. Armstrong thinks too exclusively of "scientific method" in connexion with "scientific subjects"—that is to say, subjects of natural and physical science, to which the term "science" is applied in an artificially restricted sense, calculated to mislead, and, in fact, misleading. No subject is properly taught unless it be taught scientifically. Anyhow, we shall all be glad to have such convenient access to Prof. Armstrong's views, which in many respects deserve, and are receiving, careful consideration. The pity is that he burdens his exposition with undeserved and misconceived reproach of teachers who are recalcitrant on the basis of knowledge and experience with as much justice as he is insistent on changes. Really, all the knowledge and sense of the planet is not monopolized by Prof. Armstrong, and teachers are just as difficult as other people to conciliate to opinions that are thrust upon them with scant consideration for their intelligence and in defiance of their practical experience. Prof. Armstrong might now drop the "fortiter in re" and try the "suaviter in modo." We can assure him that teachers are as honestly anxious as he can be to know the right thing and to do it. The papers, though not unfrequently perverse and provoking, are, of course, very able, interesting, and instructive; and teachers will, no doubt, accord to them, serious consideration, which they amply deserve.

NATURE STUDY.

The Face of Nature. Popular Readings in Elementary Science. By the Rev. C. T. Ovenden, D.D., Canon of St. Patrick's. (2s. Murray's Home and School Library.)

There are four readings—on "Weather Forecasting," "Vegetable Life," "The Record of the Rocks," and "The Story of a Common Stone." They are meant "to afford recreation and instruction on winter evenings in the form of popular lectures on scientific subjects," or for the profitable guidance of "those people—especially the younger people—who are fond of Nature." There are many simple illustrations, with directions (in appendix) for utilizing them in slides for a magic lantern. The "readings" are charmingly written, convey much useful instruction in simple form, and are calculated to excite and foster interest in the phenomena of Nature.

The Nature Student's Note-Book. Part I.: *Nature Notes and Diary* By the Rev. Canon Steward, M.A. Part II.: *Tables for Classification of Plants, Animals, and Insects in detail.* By Alice E. Mitchell. (2s. net. Constable.

The Notes are arranged so as to "suggest to the Nature student what to do and what to look for in the different months of the year," and the blank page for "Memoranda" invites the student to record his own observations and discoveries. The system is sure to foster a habit of intelligent outlook and inquiry. The Tables have been skilfully compiled, and will be very helpful or reference. Incidentally there are given hints for young gardeners, weather indications, bits of folk-lore, &c. The book will prove very serviceable.

First Book of Forestry. By Filibert Roth, Chief of the Division of Forestry, United States Department of the Interior, in charge of the work in the Government Forest Reserves. (3s. 6d. Ginn.)

Mr. Roth has not tried to write a text-book or manual of forestry; his object is "to present in simple, non-technical language some of the general principles underlying the science, and to state the methods which are employed and the objects to be attained in the practice of forestry." This he has done in view of the desire "to introduce this useful and interesting study into our public schools and country homes." He deals with American forests, and has in view American readers; but much of his book will apply to British woods, and, with the aid of the numerous illustrations, it will be intelligible throughout, and most interesting, to British readers. It is admirably got up.

MISCELLANEOUS.

Mr. Alfred J. Martin presents a compact and handy volume of *Up-to-date Tables of Imperial, Metric, Indian, and Colonial Weights and Measures* (2s. 6d., Fisher Unwin). The main purpose is to urge the adoption of the metric system and to explain everything about it; but the book also deals with a vast miscellany of "matters indirectly connected with coinage, time, weights and measures, and their practical applications," with "some particulars concerning the Empire which would be affected by the reforms advocated." It is an extraordinary example of *multa in parvo*.—Mr. Martin also provides "a supplement" to the foregoing volume—an *Up-to-date Beginner's Table-Book* "for Schools and Home-teaching" (1d., Fisher Unwin), "being a guide to simple Arithmetic, showing how Decimals can be taught at a very early age," and containing "all necessary tables of time," &c., and even "a short treatise on Book-keeping."—We have also *The Metric System*, explained, with exercises, examples, and illustrations, by Georges Rouselle, teacher in the Paris Communal Schools, translated and adapted by R. Smith, Head Master of the Paris British Schools, and published under the patronage of the British Chamber of Commerce at Paris (1s. 6d. net, Gedalge, Paris; Hachette). The explanations are full and practical, and they are much assisted by judicious illustrations.

The Public Schools Year-Book (2s. 6d., Swan Sonnenschein), now in its fifteenth year, contains not only very full information about the public schools but also a long series of appendixes (occupying nearly half the volume) on examinations for the various branches of the Civil Service, on the Head Masters' Conference, the Oxford and Cambridge Certificate Examination, 1903, the engineering, musical, and medical professions, and agriculture and horticulture (with Colonial openings for public-school boys), as well as a select list of preparatory schools, notes on educational books of the year, &c. It is a very comprehensive and handy record of matters of interest to parents, teachers, and educational workers.

Who's Who, 1904 (7s. 6d. net, Black), has grown to 1,700 pages, now occupied by biographies alone—an extremely useful volume of reference. The tables, which have been gradually crushed out—though they were in fact the original nucleus of the book—have been gathered together into a separate publication, *Who's Who Year-Book*, 1904 (1s. net, Black), and will be found most serviceable. Both volumes, indeed, are indispensable to busy men.

The Englishwoman's Year-Book and Directory, 1904 (2s. 6d. net, Black), edited by Emily Janes, appears in its sixth year, revised, enlarged, and entirely remodelled. We have had woeful evidence of its popularity: last year it gave a wrong address for our publisher, and this year it repeats the blunder (in spite of our protest).

The Cape of Good Hope Teachers' Annual, 1904, now in its fourth year of publication (1s. 6d. Lancaster: Gilchrist), gives a very full account of educational institutions in South Africa.

NEW EDITIONS AND REPRINTS.

Messrs. Constable have just issued two more volumes of "An English Garner"—*Some Longer Elizabethan Poems* and *Shorter Elizabethan Poems* (4s. net each), with introductions by A. H. Bullen. The introductions, if comparatively brief, are well informed and helpful. The volumes contain much rare and curious matter illustrative of the period and very acceptable to literary readers. They are liberally printed and got up.

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Library Association Record. Vol. VI. No. 1 (January). 1s. net. Whitcomb House, Whitcomb Street, S.W.
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London University Guide and University Correspondence College Calendar, 1904. Burlington House, Cambridge.

Matriculation Directory. No. XXXVI., January, 1904. Burlington House, Cambridge. (University Tutorial Series.)
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MATHEMATICS.

15418. (W. J. GREENSTREET, M.A.)—The foci of a variable ellipse are fixed. From a point P normals are drawn to the variable ellipse. Find the loci of the centre and foci of the conic passing through the point P and through the feet of the normals.

Solutions (I.) *by* R. F. DAVIS, M.A., *and* H. BATEMAN, B.A.; (II.) *by the* PROPOSER.

(I.) Draw PN, PM perpendicular to CA, CB respectively. Produce PN to Q and MP to R so that $PN = e^2PQ$ and $MP = e^2MR$; and complete the rectangle RPQO. Then it is known that a rectangular hyperbola having O for its centre, OQ, OR for its asymptotes, and passing through C, P will intersect the ellipse in four points, the normals at which co-intersect at P. [See solution, by R. F. Davis, M.A., to Question 52, *Math. Gaz.*, Vol. I., p. 21.] Then, since PN : RO = MP : MR, the locus of O is the straight line through M, N. Moreover, if F be a focus of the rectangular hyperbola, FP ~ FC varies as the difference of the perpendicular distances of P, C from the directrix, that is to say, is constant. Hence the locus of F is a hyperbola having P, C for foci (passing through M, N).

It is to be noticed that these results do not involve the lengths of the axes. The restriction that the variable ellipses should be confocal may therefore be removed. It will be sufficient for them to have the same centre and their axes in the same direction.

(II.) If P be (ξ, η), and the equation to the ellipse be $x^2/a^2 + y^2/b^2 = 1$, that of the Apollonian hyperbola is $c^2xy + b^2\eta x - a^2\xi y = 0$. The four foci are found to be $[a^2\xi \pm ab\sqrt{(\pm 2\xi\eta)}]/c^2$, $-[b^2\eta \pm ab\sqrt{(\pm 2\xi\eta)}]/c^2$, and the locus of the foci consists of two conics, whose equations are

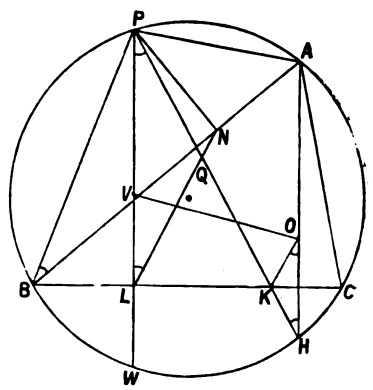
$$(\xi \pm \eta)^2(x^2 + y^2) = (\xi x + \eta y \pm \xi\eta)^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots (A).$$

If O be the centre of the original ellipse, it is also a focus of each of these conics. Their centre will be found to bisect OP. O and P are common foci. The locus of the centre is $x/\xi + y/\eta - 1 = 0$, *i.e.*, the join of the projections of P on the axes. As the three loci are independent of a and b, the ellipses need not be confocal. [The conics (A) will always be an ellipse and a hyperbola.]

Mr. BATEMAN also remarks that the locus of the foci consists of two conics, and Mr. DAVIS draws attention to the fact that the existence of the second of the conics becomes evident in analysis from the consideration of the imaginary foci, of which pure geometry does not take account.

The Four Simson-Lines of Four Points on a Circle, each with regard to the Triangle formed by the other three, are Concurrent.

By W. F. BEARD, M.A.



If O be the orthocentre of ABC, and PL, PN perpendiculars from P to BC and AB, then LN is the Simson-line of P with respect to ABC. Now plainly the following angles are equal:—

$$\angle KOH = \angle KHO = \angle LPK = \angle PBA = \angle PLQ.$$

Since $\angle LPK = \angle PLQ$ in the right-angled triangle PLK, we get PQ = QK; while, since

$$\angle KOH = \angle PLQ,$$

OK is parallel to LN; therefore PO is bisected by LN.

Again, taking LV = LW, V is the orthocentre of PBC, and, PW, AH being parallel chords, PA = WH = OV (O and V being the images of H and W in BC). Hence OV is equal and parallel to AP; therefore APVO is a parallelogram, and AV is bisected at the middle point of OP. But the Simson-line of A with regard to PBC bisects AV (by the preceding theorem); therefore it also bisects OP. Hence the four Simson-lines are concurrent at the middle point of OP.

The further theorem is likewise obvious: that the four orthocentres of ABC, PBC, PCA, PAB form a quadrilateral equal in all respects to PABC.

15429. (H. MACCOLL, B.A.)—What is the chance that xy is greater than a: firstly, on the assumption that x and y are each taken at random between 1 and 5; secondly, on the assumption that x is taken at random between 1 and 5, and then y at random between 1 and x? The constant a is positive.

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Solution by the PROPOSER.

We will first find the limits of variation on each assumption. Let A = our data on the first assumption, and let Q = $(xy > a)$. We have

$$A = y_{1'.2}x_{1'.2}, \quad Q = y_3;$$

therefore

$$AQ = y_{1'.2.3}x_{1'.2}$$
$$= y_{1'}(y_2x_2 + y_3x_{3'})x_{1'.2}$$
$$= y_{1'.2}x_{1'.2.3} + y_{1'.3}x_{3'.1'.2}$$
$$= y_{1'.2}x_{1'.2.3} + y_{1'.3}x_{3'.1'.2.4} \quad [\text{for } y_{1'.3} \text{ implies } y_1 > y_3, \text{ which implies } x_4]$$
$$= y_{1'.2}x_{1'}(x_2a_{1'} + x_3a_1) + y_{1'.3}(x_{3'}a_{2'} + x_{1'}a_2)(x_2a_{2'} + x_4a_2)$$
$$= y_{1'.2}(x_{1'.2}a_{1'} + x_{1'}\ \ a_1) + y_{1'.3}(x_{3'.2}a_{2'} + x_{1'.4}a_2)$$
[for $a_{2'.2}$ is impossible]
$$= y_{1'.2}(x_{1'.2}a_{1'}{}^0 + x_{1'.3}a_{2'.1}) + y_{1'.3}(x_{3'.2}a_{2'.1} + x_{1'.4}a_{3'.2})$$
[assuming a to be positive; for $x_{1'.3} : (x_1 > x_3) : a_{2'}$, $x_{3'.2} : a_1$, and $x_{1'.4} : a_{3'}$].

Limits on First Assumption.		
$y_1 = 5$	$x_1 = 5$	$a_1 = 1$
$y_2 = 1$	$x_2 = 1$	$a_2 = 5$
$y_3 = a/x$	$x_3 = a$	$a_3 = 25$
	$x_4 = \frac{1}{5}a$	

Arranging according to the limits of the constant, we get finally on the first assumption

$$a_{1'.0}(y_{1'.}\ x_{1'.2}) + a_{2'.1}(y_{1'.2}x_{1'.} \quad + y_{1'.3}x_{3'.2}) + a_{3'.2}(y_{1'.3}x_{1'.4}).$$

To find the limits on the second assumption, let A = our data $= y_{1'.2}x_{1'.2}$, and let

$$Q = (xy > a) = y_3.$$

$$AQ = y_{1'.2.3}x_{1'.2}$$
$$= y_{1'.2}x_{1'.2.3} + y_{1'.3}x_{3'.1'.2.4},$$

as before, but with different values of y_1 and x_4. By the same process as before we get finally

Limits on Second Assumption.		
$y_1 = x$	$x_1 = 5$	$a_1 = 1$
$y_2 = 1$	$x_2 = 1$	$a_2 = 5$
$y_3 = a/x$	$x_3 = a$	$a_3 = 25$
	$x_4 = \sqrt{a}$	

$$AQ = a_{1'.0}(y_{1'.2}x_{1'.2}) + a_{2'.1}(y_{1'.2}x_{1'.3} + y_{1'.3}x_{3'.4}) + a_{3'.2}(y_{1'.3}x_{1'.4}).$$

Thus, whichever of the two assumptions we take as our data, AQ is possible only in three cases, namely, $a_1 > a > 0$, $a_2 > a > a_1$, and $a_3 > a > a_2$. To find the probability of any statement $y_{m'.n}x_{r'.s}$ in any of the three cases, and on either assumption, let the symbol x^a assert as a statement that, out of the many possible and equally probable values of x between x_1 and x_2, a particular value x is the one that will turn up; and let y^a similarly assert that, out of the many possible and equally probable values of y between y_1 and y_2, a particular value y is the one that will turn up. We have

$$x^a y^a/A = x^a/A \,.\, y^a/Ax^a = dx/(x_1 - x_2)\,.\,dy/(y_1 - y_2),$$

and the sum of these infinitesimal chances within the limits prescribed by the statement $y_{m'.n}x_{r'.s}$ is the chance that this prescribing statement is true. Hence, whatever assumption we take,

$$\frac{y_{m'.n}x_{r'.s}}{A} = \int_{y_n}^{y_m} dy \int_{x_s}^{x_r} dx \frac{1}{(x_1 - x_2)(y_1 - y_2)}.$$

Taking the first assumption, we have $(x_1 - x_2)(y_1 - y_2) = 16$; so that, on the first assumption, we get three different answers depending upon the limits of a, namely,

(1) $Q/Aa_{1'.0} = 1$, (2) $Q/Aa_{2'.1} = \frac{1}{16}(15 + a - a\log a)$,

(3) $Q/Aa_{3'.2} = \frac{1}{16}(25 - a + a\log a - 2a\log 5)$.

When a is greater than a_3 the chance is, of course, zero. As a particular case, suppose $a = 4$. This is included in the second case, and we get $Q/A = \frac{1}{16}(15 + 4 - 4\log 4) = \cdot 8409$ nearly. Next, suppose $a = 9$. This is included in the third case, and we get

$$Q/A = \tfrac{1}{16}(25 - 9 + 9\log 9 - 18\log 5) = \cdot 4253 \text{ nearly.}$$

Taking now the second assumption, that y is taken at random between 1 and x, we have $(x_1 - x_2)(y_1 - y_2) = 4(x - 1)$, from the second table of limits, and again three answers, namely,

(1) $Q/Aa_{1'.0} = 1$,

(2) $Q/Aa_{2'.1} = \frac{1}{4}\{5 - \sqrt{a} + a\log\sqrt{a} - (a-1)\log(\sqrt{a}+1)\}$,

(3) $Q/Aa_{3'.2} = \frac{1}{4}\{5 - \sqrt{a} + a\log 5 - (a-1)\log 4 - a\log\sqrt{a} + (a-1)\log(\sqrt{a}-1)\}$.

When a is greater than a_3 the chance is zero.

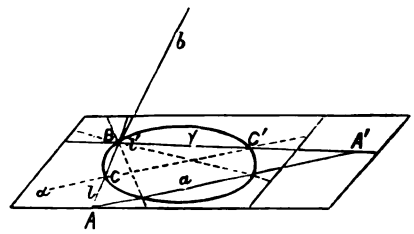
As particular cases, when $a = 4$, we get $Q/A = \cdot 6192$ nearly, and when $a = 9$, we get $Q/A = \cdot 2633$ nearly.

It is assumed throughout that a is positive; for on the assumption that a is negative there would be no problem to solve, the chance required in that case being evidently 1, since x and y are restricted between 1 and 5. (For a full explanation of the method see my paper on "The Calculus of Limits," *Reprint*, New Series, Vol. v.)

Note.—I may mention that I have tested the last two chances ($\cdot 6192$ and $\cdot 2633$) by an easy experimental method of 500 trials, and found that the event $xy > 4$ happened 320 times instead of the most likely number, *a priori*, 310; while the event $xy > 9$ happened 137 times instead of the most likely number 132. These results are, I think, as close as could reasonably be expected.

8712. (Professor SCHOUTE.)—A surface S of the third order passing through two non-coplanar lines a and b is given, and a line l intersects a in A, b in B, and S for the third time in C, under the condition AC = CB. Find (1) the locus of the line l, and (2) its intersection with the given surface S.

Solution by Professor JAN DE VRIES.

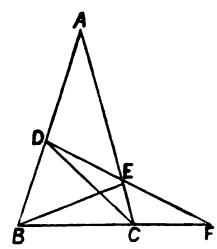


A plane α through a cuts S still in a conic γ passing by the point B where a cuts b. Hence there are two lines l through B, intersecting γ in C and a in A, under the condition AC = CB. Hence b is a double line of the locus (l), and so will be a. Hence the locus (l) is a ruled surface of the fourth order with two double lines a and b.

Its intersection with S consists of the double lines a and b, each being counted twice, the five straight lines of S which cut both a and b, and of the cubic curve that S has in common with the plane which bisects at right angles the common perpendiculars of a and b.

[Mr. Nesbitt's note (*Educational Times*, Vol. LVII., p. 40, and *Mathematical Reprint*, Vol. VI., New Series, p. 29) therefore loses significance.]

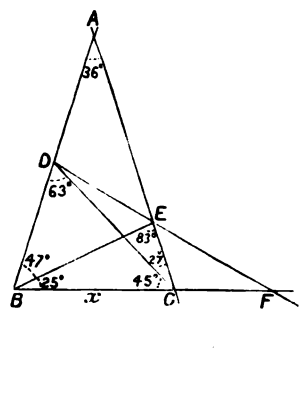
15474. (*Communicated by* ARTHUR ANSTEY, B.A., L.C.P.)—ABC is an isosceles triangle, base angles being 72°; ∠EBC = 25°, ∠DCB = 45°; DE is joined and produced to meet the base produced in F. Find the angle EFC.



Solutions (I.) *by* C. M. ROSS; (II.) *by* CONSTANCE I. MARKS, B.A.; (III.) *by* W. SCRIMGEOUR, M.A., B.Sc., *and* S. C. BAGCHI, B.A.

(I.) $$CD = \frac{x\sin 72°}{\sin 63°},$$

$$CE = \frac{x\sin 25°}{\sin 83°}.$$



Again $CED + CDE = \pi - 27°$,

$$\tan\tfrac{1}{2}(CED - CDE)$$
$$= \frac{CD - CE}{CD + CE}\cot\frac{27°}{2}$$
$$= \frac{\sin 72°\sin 83° - \sin 25°\sin 63°}{\sin 72°\sin 83° + \sin 25°\sin 63°}\cot 13\tfrac{1}{2}°$$
$$= \frac{\cos 11° + \cos 25° - \cos 38° + \cos 88°}{\cos 11° + \cos 25° + \cos 38° - \cos 88°}$$
$$= \frac{1{\cdot}1348237}{2{\cdot}6410463} \times 4{\cdot}1652998$$
$$= 1{\cdot}7892 \text{ (approximately)}$$
$$= \tan 60°\,48';$$

therefore $\frac{1}{2}(CED - CDE) = 60°\,48'$, $\frac{1}{2}(CED + CDE) = 76°\,30'$;

therefore $CDE = 15°\,42'$;

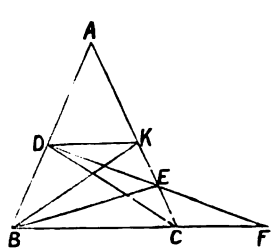
therefore $EFC = \pi - 108° - 27° - 15°\,42' = 29°\,18'$ (approximately).

(II.) Draw DK parallel to BC, and join BK. Then the triangle BCK is easily shown to be equal to the triangle DBC in every respect. Hence

$$\angle KBE = 20°, \quad \angle BKC = 63°.$$

Also $\angle KCB = 72°$ (given);

and $\left.\begin{aligned}\angle DCE &= 27°\\ \angle DKC &= 108°\\ \angle BEC &= 83°\end{aligned}\right\}$ (evidently).



By a well known theorem which we will call (X), $CK\cot 83° = CE\cot 63° - KE\cot 72°$,

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and $\quad CK\cot 83° = KE\cot 20° - CE\cot 25°.$

By subtraction, $0 = CE(\cot 63° + \cot 25°) - KE(\cot 72° + \cot 20°)$; therefore

$$\frac{CE}{KE} = \frac{\cot 72° + \cot 20°}{\cot 63° + \cot 25°} = \frac{\cdot 3249197 + 2\cdot 7474774}{\cdot 5095254 + 2\cdot 1445069} \text{ (from Chambers' Tables)}$$

$$= \frac{3\cdot 0723971}{2\cdot 6540323}.$$

Let $\theta = \angle DEK$; then, by (X), $CK\cot\theta = KE\cot 27° - CE\cot 108°$,

$$5\cdot 7264294\cot\theta = 2\cdot 6540323\cot 27° - 3\cdot 0723971\cot 108°;$$

therefore $\quad \cot\theta = \dfrac{2\cdot 6540323 . 1\cdot 9626105 + 3\cdot 0723971 . \cdot 3249197}{5\cdot 7264294}$

(from Chambers' Tables)

$= 1\cdot 0839414$, approximately.

Using the usual methods for proportional parts, we find $\theta = 42° 41' 36''$ nearly; therefore $\angle EFC = 72° - 42° 41' 36''$ nearly $= 29° 18' 24''$ nearly.

[Rest in *Reprint*.]

Note on "Minimum Deviation through a Prism."

By R. Chartres.

(By kind permission of the *Philosophical Magazine*.)

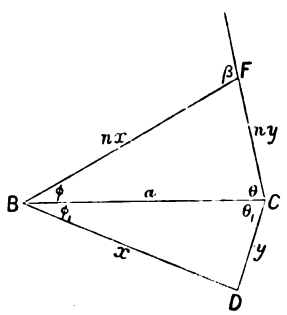
$\sin\theta = \mu\sin\theta_1$, $\quad \sin\phi = \mu\sin\phi_1$;

$\theta + \phi$ to be a minimum;

$\theta_1 + \phi_1 =$ constant.

$\sin\beta/\sin\phi = a/ny = \sin D/(n\sin\phi_1)$;

therefore $n\sin\beta = \mu\sin D =$ constant. Now, if ϕ_1 or θ_1 be small, n will practically = unity, while at the symmetrical position $n^2 = (1-\sin^2\phi_1)/(1-\mu^2\sin^2\phi_1)$; therefore $n =$ maximum at the symmetrical position; therefore $\beta =$ minimum; therefore deviation is a minimum there.



Or, without n, if ϕ_1 is small,

$$\phi - \phi_1 = (\mu - 1)\phi_1;$$

but $\theta - \theta_1 > (\mu-1)\theta_1$, decreasing with θ_1. Now $\theta_1 + \phi_1 =$ constant; therefore the increment $\phi_1 =$ decrement of θ_1; therefore in the expression $(\theta - \theta_1) + (\phi - \phi_1)$ the increase in $(\phi - \phi_1)$ is less than the decrease in $(\theta - \theta_1)$ as ϕ_1 increases up to its value at the symmetrical position; therefore the expression or deviation is then a minimum.

15481. (Lt.-Col. Allan Cunningham, R.E.)—Factorize completely $N = 96^{18} + 1$.

Solution by the Proposer.

$$\text{Let } N = Y^{18} + 1 = \frac{Y^{18}+1}{Y^6+1}\cdot\frac{Y^6+1}{Y^2+1}(Y^2+1) = N_3 . N_1 . N_0 \text{ (suppose)}.$$

Here taking $Y = 96$, gives $N_0 = 96^2 + 1 = 13 . 709$. Also, when $Y = 6y^2$, then N_1, N_3 are Sext-Aurifeuillians, and can be resolved into two factors L, M algebraically (by formulæ given in Ed. Lucas's *Sur la Série récurrente de Fermat*, Rome, 1879, p. 6) as follows:

$$N_1 = L_1 . M_1; \quad L_1 = P_1 - Q_1, \ M_1 = P_1 + Q_1;$$

$$P_1 = 1 + 3Y_1 + 6Y_1^2, \ Q_1 = 6y_1(1 + Y_1).$$

Taking $y_1 = 4$ gives $Y_1 = 16$;

$$P_1 = 9505, \ Q_1 = 3328; \quad L_1 = 7177, \ M_1 = 11833;$$

therefore $\quad N_1 = 7177 . 11833.$

Next, $\quad Y^{18} = 96^{18} = 6^6(6 . 4^3)^{12} = (6 . 384^2)^6 = Y_3^6;$

$$Y_3 = 6 . 384^2; \quad y_3 = 384.$$

Then $N_3 = (1 + Y_3^6)/(1 + Y_3^2)$, a Sext-Aurifeuillian.

$$N_3 = L_3 M_3, \quad L_3 = P_3 - Q_3, \quad M_3 = P_3 + Q_3;$$

$$P_3 = 1 + 3Y_3 + Y_3^2, \quad Q_3 = 6y_1(1 + Y_3);$$

therefore $\quad P_3 = 1 + 18 . 384^2 + 36 . 384^4 = 782{,}760{,}443{,}905;$

$$Q_3 = 6 . 384(1 + 6 . 384^2) = 2{,}038{,}434{,}048;$$

$$L_3 = 700{,}722{,}009{,}857, \quad M_3 = 784{,}798{,}877{,}953;$$

Next a table of solutions of the congruence $(y^6 + 1)/(y^2 + 1) \equiv 0 \pmod p$ up to $p > 10{,}000$, prepared by the present writer (and which it is hoped will be published shortly), shows that N has the divisors 37, 73, 397, 613, and no more $< 10{,}000$. Here by actual trial division

$$L_3 = 37 . 397 . 53150113; \quad M_3 = 73 . 613 . 17537797;$$

and the large factors in L_3, M_3 must be primes (because the table alluded to shows that N_3 has no more divisors $> 10{,}000$).

Collecting the above results $N = (L_3 M_3)(L_1 M_1) N_0$, and the factorisation is complete. Note that N contains 36 figures.

15403. (A. M. Nesbitt, M.A.)—A triangle is inscribed in a circle, and the squares on its sides are proportional to the perpendiculars from the opposite angles on a tangent to the circle. Prove that one side is a diameter.

Solutions (I.) *by* R. F. Davis, M.A., Professor Joseph Brown, *and others*; (II.) *by* S. C. Bagchi, B.A., *and the* Proposer; (III.) *by* Professor Sanjána, M.A.

(I.) Let AL, BM, CN be perpendiculars upon the tangent at any point P to the circum-circle of ABC. Then, since $PA^2 = 2R . AL$, and $BC . PA \pm CA . PB \pm AB . PC = 0$, therefore $\Sigma BC\sqrt{(AL)} = 0$, universally. In this case $\Sigma(\pm BC^2) = 0$; and the triangle ABC is right-angled.

(II.) Taking the inscribed triangle as that of reference, the equation to the circle is $a/x + b/y + c/z = 0$. The tangent at any point (f, g, h) of the circle is $lx + my + nz = 0$ where $lf^2 = a$, $mg^2 = b$, $nh^2 = c$.

Let $\Delta_1^2 = l^2 + m^2 + n^2 - 2mn\cos A - 2nl\cos B - 2lm\cos C$. By the conditions of the problem $\lambda a^2 = ap_1/(\Delta_1 f^2)$, $\lambda b^2 = bp_2/(\Delta_1 g^2)$, $\lambda c^2 = cp_3/(\Delta_1 h^2)$. But $ap_1 = bp_2 = cp_3 = 2$(area of ABC); therefore $\pm af = \pm bg = \pm ch$. Now of f, g, h two must be of the same sign, Take h negative and f, g both positive. Then, since $a/f + b/g + c/h = 0$, $a^2 + b^2 = c^2$; therefore C is a right angle, and AB is a diameter.

[Rest in *Reprint*.]

15449. (James Blaikie, M.A.)—If $u_1, u_2, u_3, \ldots, u_n$ be a series subject to the conditions (1) $u_1 = 1$, (2) $u_n = u_2 u_{n-1} + u_{n-2}$, prove the relations (3) $u_n = u_r u_{n-r+1} + u_{r-1}u_{n-r}$, (4) $u_{2r-1} = u_r^2 + u_{r-1}^2$,

(5) $u_{2r} = (u_{r+1}^2 - u_{r-1}^2)/u_2$, (6) $\Sigma_n u = (u_n + u_{n+1} - u_1)/u_2$.

This Question is in part a generalization of Question 15229. When $u_2 = 2$, the series becomes 1, 2, 5, 12, 29, ..., which is useful in connection with the solution of Question 15414.

Solution by the Proposer.

By (2) $\quad u_n = u_2 u_{n-1} + u_{n-2} = u_2(u_2 u_{n-2} + u_{n-3}) + u_{n-2}$

$$= (u_2^2 + 1)u_{n-2} + u_2 u_{n-3} = u_3 u_{n-2} + u_2 u_{n-3} = \ldots$$

$$= u_r u_{n-r+1} + u_{r-1}u_{n-r} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Substituting $2r-1$ for n, we obtain

$$u_{2r-1} = u_r^2 + u_{r-1}^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Substituting $2r$ for n,

$$u_{2r} = u_r u_{r+1} + u_{r-1}u_r = (u_{r+1} + u_{r-1})(u_{r+1} - u_{r-1})/u_2 \text{ by (2)}$$

$$= (u_{r+1}^2 - u_{r-1}^2)/u_2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5).$$

Again by (2) we have

$$u_{n+1} - u_{n-1} = u_2 u_n, \quad u_n - u_{n-2} = u_n u_{n-2}, \ \ldots, \ u_3 - u_1 = u_2 u_2, \quad u_2 = u_2 u_1.$$

Summing, we obtain

$$u_{n+1} + u_n - u_1 = u_2 \Sigma_n u \text{ or } \Sigma_n u = (u_{n+1} + u_n - u_1)/u_2 \ldots\ldots\ldots (6).$$

15165. (Professor Sanjána, M.A.).—Show that, when $6n + 3$ is not a power of 3, $(x^{6n+3} + 1)/(x^3 + 1)$ has three factors at least, n being a positive integer and $3x$ a perfect square.

Note by the Proposer.

When $6n + 3 = 3^k$, I find, by ordinary methods, that the number of algebraical factors of $(x^{6n+3} + 1)/(x^3 + 1)$ is $2(k-1)$. Thus, for instance,

$$(x^9 + 1)/(x^3 + 1) = x^6 - x^3 + 1 = (x^3 - xy + 1)(x^3 + xy + 1),$$

where $y^2 = 3x$.

Also $(x^{27} + 1)/(x^3 + 1) = (x^6 - x^3 + 1)(x^{18} - x^9 + 1)$, and each bracket on the right side has two factors, as shown above. So also

$$(x^{81} + 1)/(x^3 + 1) = (x^6 - x^3 + 1)(x^{18} - x^9 + 1)(x^{54} - x^{27} + 1).$$

The process is clearly general.

QUESTIONS FOR SOLUTION.

15499. (Lt.-Col. Allan Cunningham, R.E. — *Revised*.) — Let $N = 111\ldots11$ consist of q^n units in the scale of $r = mq + 1$, q being *prime*; then $N = Mq^n$.

15516. (Hon. G. R. Dick.)—The surface whose co-ordinates at any point are given by

$$x = \rho\cos\phi, \ y = \rho\sin\phi, \ z = b\phi + c\int[(\rho^2 + b^2)/(\rho^2 - c^2)]^{\frac{1}{2}}\, d\rho/\rho$$

is a minimum surface: exhibit them in Monge's form; also the surface

$$\sin z = \sinh x \sinh y.$$

15517. (C. M. Ross.)—Eliminate x, y, z from the equations

$$ax^2 + by^2 + cz^2 + 2fyz + 2gzx + 2hxy = 0,$$

$$a'x^2 + b'y^2 + c'z^2 + 2f'yz + 2g'zx + 2h'xy = 0,$$

$$a''x^2 + b''y^2 + c''z^2 + 2f''yz + 2g''zx + 2h''xy = 0,$$

expressing the eliminant as the equation of a determinant to zero.

15518. (James Blaikie, M.A.)—A pack of 52 cards is shuffled in the following way:—The 2nd card is placed over the 1st, the 3rd under the 1st, the fourth over the 2nd, the 5th under the 3rd, and so on alternately.

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Find after how many such shuffles the pack will have regained its original order. Solve a similar question for packs of 10, 24, 30, 32 cards, and establish any general principles.

15519. (Professor SANJÁNA, M.A.)—Find the condition that

$$x^9 + ax^7 + bx^5 + cx^3 + d$$

may be divisible by $(x+h)^3$. Also determine p, q, r in order that

$$x^9 + px^7 + qx^5 + rx^3 + 1$$

may be divisible by $(x-1)^3$ or $(x+1)^3$.

15520. (ROBT. W. D. CHRISTIE.)—Solve generally

$$A^3 + B^2 = (a^3 + b^2)(c^2 + d^2)$$

in integers.

15521. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—If σN denote the sum of the sub-factors of N (including 1, but excluding N), obtain some solutions of $\sigma N = X^2$ (an *even* square).

15522. (D. BIDDLE.)—Prove that, if a number (N) terminate in 2, 3, 7 or 8, it cannot be divided without remainder in such a way as to make the difference between the quotient and divisor a multiple of 5. Also state the general rule for finding the impossible terminals of N, where the modulus given is other than 5 (as above).

15523. (A. M. NESBITT, M.A.)—A man, who has m hats of his own in his hall, is visited by n friends, each wearing a hat. They leave their hats with those of their host. When they are going away they are unfortunately not in a condition to distinguish between one hat and another. Find the chance that no guest takes away his own hat.

15524. (R. CHARTRES.) (Suggested by Question 15447).—Find the mean value of the angle subtended by BC at all points of the area BAC, (1) when BAC is a segment of a circle and $A = \pi/n$, (2) when BAC is any triangle.

15525. (G. H. HARDY, M.A.)—Find the area of the diagonal triangle of a quadrilateral, given the areal equations of its sides.

15526. (Professor NEUBERG.)—Soient M un point fixe et N un point mobile d'une hyperbole équilatère. Trouver le lieu du point d'intersection de la normale en N à l'hyperbole avec la perpendiculaire élevée en M sur la corde MN.

15527. (L. ISSERLIS.)—Two conics touch at O. The distances of their centres from the tangent at O are y, Y and their radii of curvature at O are ρ, R. The diameter of the first through O meets it again in A and the tangent at A meets the second conic in P, Q. Prove that, if $1/y - 1/Y = 2/\sqrt{(RY)}$ then the area of the triangle OPQ is $4\rho^{\frac{1}{2}} R^{-\frac{1}{2}} Y^{\frac{1}{2}}$.

15528. (A. M. NESBITT, M.A.)—A triangle ABC is circumscribed by a hyperbola whose asymptotes are parallel to the bisectors of the angle A and its supplement. Find the angle at which the tangent at A cuts the opposite side.

15529. (R. TUCKER, M.A.)—AB is a diameter and C a variable point on the circumference of a circle. Find the locus of the "S"-points of ACB. The perpendicular from C on the diameter is CD. Find the locus of the "S"-points of CDB, CDA, and the envelope of the join of the "S"-points.

15530. (C. E. YOUNGMAN, M.A.)—Triangles A'BC, B'CA, C'AB directly similar being drawn on the sides of ABC, suppose them such that perpendiculars from A, B, C on the sides of A'B'C' meet at a point P, whose isogonal in ABC is P'. Then it is well known that the loci of A', B', C', P' are four concurrent lines, perpendicular to the sides and Lemoine line of ABC. Prove that, if we read parallel instead of perpendicular, the proposition still holds; but that, in both cases, if we make A'CB, B'CA, C'AB the similar system, the locus of P' will be the same as that of A'.

15531. (R. F. DAVIS, M.A.)—If $O_1, O_2, \ldots, O_n$ are fixed points, and $\kappa_1^2, \kappa_2^2, \ldots, \kappa_n^2$ are fixed constants, and

$$O_1P.O_1P_1 = \kappa_1^2, \quad O_2P_1.O_2P_2 = \kappa_2^2, \ \ldots, \ O_nP_{n-1}.O_nP_n = \kappa_n^2,$$

then, if P describe any curve, P_n describes an inverse of a second curve equal in all respects but position to the first. [Repeated inversion does not indefinitely increase the degree of a curve.]

15532. (*Communicated by* R. F. WHITEHEAD, B.A.)—The ends of a room are 12 ft. square and its length is 30 ft. Show that the shortest path a spider situated 3 ft. from the ceiling on the mid-line at one end of the room can take towards a fly at the diametrically opposite point on the other end wall is about 41 ft. 9½ in.

15533. (Professor COCHEZ.)—On donne une circonférence graduée comme un cadran d'horloge; à chaque division est appliqué un poids proportionnel au numéro de la division. Trouver le centre de gravité du système.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

9345. (Professor HAUGHTON, F.R.S.)—A boiler contains water and steam at 4 atmospheres' pressure; if the pressure be suddenly diminished, what part does the water take in the explosion that occurs? If the pressure be increased up to 500 atmospheres, how do the energies stored up in the steam and water vary?

9537. (Professor PLAMENEWSKI, M.A.)—The rate of interest increases gradually, the rate of increase at any time varying as the rate of interest; interest being paid every instant, the principal and the rate of interest are both doubled in p years. Find the initial rate per cent. per annum.

10178. (E. LEMOINE.)—Soient ABC, A'B'C' deux triangles; a, b, c, a', b', c' les longueurs de leurs côtés; soient, en coordonnées normales, ABC étant le triangle de référence, $\beta\lambda + \gamma = 0$, $\gamma\mu + \alpha = 0$, $\alpha\nu + \beta = 0$ les équations des parallèles à B'C', C'A', A'B' menées respectivement par A, B, C; soient aussi, A'B'C' étant le triangle de référence, $\beta\lambda' + \gamma = 0$, $\gamma\mu' + \alpha = 0$, $\alpha\nu' + \beta = 0$ les équations des parallèles à BC, CA, AB menées respectivement par A', B', C'. Cela posé, démontrer que, si l'on a identiquement

$$\cos A\,(b - \lambda c)(b\mu\nu - \mu a + c) + \cos B\,(c - \mu a)(c\nu\lambda - \nu b + a) + \cos C\,(a - \nu b)(a\lambda\mu - \lambda c + b) = 0,$$

on aura aussi identiquement

$$\cos A'\,(b' - \lambda' c')(b'\mu'\nu' - \mu' a' + c') + \cos B'\,(c' - \mu' a')(c'\nu'\lambda' - \nu' b' + a') + \cos C'\,(a' - \nu' b')(a'\lambda'\mu' - \lambda' c' + b') = 0.$$

10230. (Professor MORLEY.)—In the cardioide let parallel tangents touch at PQR; then we know (Chasles' theorem) that the mean centre of PQR is fixed, being in fact the triple focus. Show that (1) QR, RP, PQ subtend equal angles at the cusp (this point in a triangle might be called isoptic centre); (2) PQR is of constant area; (3) the concentric ellipse through PQR is of given axes; (4) the tangents meet the concentric circle through the vertex in two equilateral triangles; (5) from the corners of one of these triangles draw the other six tangents—these meet the circle again at a regular hexagon, the twelve new tangents from these points meet at a regular 12-gon, and so on; (6) the sum of the common tangents drawn to two equal concentric cardioides is zero; (7) the sum of the radii of curvature at PQR is zero; (8) the loci of orthocentre, circum-centre, nine-point centre of PQR are circles; (9) the locus of intersection of perpendicular tangents or normals to a cardioide is a circle and a limaçon. [Much of this holds good also for any epicycloid.]

10340. (Professor SYLVESTER.)—On a circle $2r$ points are set at equal distances from one another. How many distinct coloured patterns can be formed when one moiety of the points are coloured blue and the other moiety red? [A problem in intercalations of which the above presents an image of the simplest case occurs in the Proposer's treatment of two binary quantics according to Hilbert's method.]

10686. (Sir R. S. BALL, LL.D., F.R.S.)—In Laplace's theory of Jupiter's satellites, the mass of Jupiter is the unit of mass, the equatorial radius of Jupiter is the unit of length, and the gravitation of two unit masses situated at a unit distance is the unit of force. Laplace says that the square of the mean motion of Jupiter multiplied into the cube of his mean distance is *equal* to the mass of the Sun. Determine the number of mean solar seconds in Laplace's unit of time.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, February 11th, 1904.—Prof. H. Lamb, President, in the Chair.

Messrs. R. C. Maclaurin, E. M. Radford, P. W. Wood, J. W. Sharpe were elected members.

Mr. Z. U. Ahmad was admitted into the Society.

The President referred to the loss sustained by the Society and by mathematicians in general by the death of Dr. Salmon, and gave an account of his scientific work.

The following papers were communicated:—

"On the Roots of the Equation $\frac{1}{\Gamma(x+1)} = c$": Mr. G. H. Hardy.

"Some Extensions of Abel's Theorem on Power Series on the Circle of Convergence": Mr. G. H. Hardy.

"On Group-Velocity": Prof. H. Lamb.

"On a certain Double Integral": Prof. A. C. Dixon.

"On an Appropriate Form of Conductor for a Moving Point Singularity": Prof. A. W. Conway.

"On the Irreducibility of Perpetuant Types": Mr. P. W. Wood.

"The Expression of $\int_0^\infty$ cn $xte^{-t}dt$ and other Integrals by means of Continued Fractions": Prof. L. J. Rogers.

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AND

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The Educational Times.

London University Teaching.

In our survey last month of the educational provision for London we held over, as requiring an article to itself, the wide subject of University teaching.

It is hardly a paradox to say that without a University London possessed the best University teachers in the world. Neither Paris nor Berlin could produce such a staff of eminent and brilliant professors as Davy and Faraday, Huxley and Tyndall, De Morgan and Martineau; and the list might be indefinitely extended. Yet none of the many and conflicting definitions of a University would include the Imperial Examination Board that has now been happily absorbed as a subordinate branch of the true University of London, which dates from June 29, 1900, when the Statutes drawn up by the Royal Commission of 1898 received the Royal assent.

The short three years which have since elapsed have been spent mainly in laying the foundations of the new institution, and there is as yet but little of the work that appears above ground—so little that the outside critic is beginning to hint not obscurely that the University is a hollow shell; an elaborate piece of machinery which creates Faculties and Boards of Study, which converts seminaries into schools of the University and college teachers into University professors, but adds nothing to the supply of higher teaching and brings no grist to the mill.

We may freely admit that, as Cicero said of the clever boy, the University at present "non res est, sed spes"; but, if, as we are convinced, the organization has proceeded on right lines, the promise for the future is indeed great. Mr. Sidney Webb does not exaggerate when he dips into the future and tells us that a London University offers "the potentiality of growing rich beyond the dreams of avarice."

Let us look first at the population for which it will cater. The Greater London as defined by the Statutes, with a radius of thirty miles, contains seven millions of inhabitants—half as many again as the population of Scotland and nearly twice as many as that of Paris and of Berlin combined. If the proportion of University students to the population were the same as in these two capitals, the University of London would number well over twenty thousand undergraduates. But to rival, or even to approach, these numbers it is evident that the University must provide teaching at a rate within the means of the average householder. In foreign capitals, by help of State subventions, the tuition fees are almost nominal; but, though in England there is little prospect of extending free education above the elementary stage, yet we may fairly hope that under the Education Act of 1902 higher education will be freely subsidized by the County Council; and in some of its branches—as, for instance, the training of teachers and scientific research—a strong case has been made out for increased Treasury grants.

Mr. Webb, who on the business side of the question is an unrivalled authority, estimates the total expenditure required to start and carry on the reformed University at a lump sum of £5,000,000—£1,000,000 for new buildings and an endowment fund to produce an income of £150,000 a year. If half of this sum were subscribed by individual donors, he reckons that a halfpenny rate would supply the remainder. This seems to us no extravagant demand; but we would add the needful corollary that endowment must take precedence of bricks and mortar.

To take a concrete instance, no one will dispute that London needs a Central Technical College, an analogue to Charlottenburg, and we are all grateful to the South African capitalists who have started the project; but we are inclined to doubt whether, with its increasing needs, the London County Council was well advised in promising so large a contribution as £20,000 a year. The Goldsmiths' Company's Polytechnic at New Cross, which it is bound to take over, will alone absorb half the sum.

The dual functions of the reformed University—to provide a technical school for brain-workers of all professions and at the same time to be a world centre for post-graduate research—are so admirably stated by Mr. Sidney Webb that it is enough to refer our readers to his volume; no *résumé* could do justice to his masterly exposition. But we may briefly indicate the points wherein his conception of a University appears to us defective and the possible dangers that he has not foreseen or has not cared at this stage to dwell on. The proposition that the London University must be a technical school for

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lawyers, doctors, engineers, &c., we can only accept with the proviso that it must train specialists who have been adequately educated by previous study of the liberal arts and sciences. Evening classes, polytechnic courses in science and commerce, are excellent things, and they will be improved and strengthened by being brought into relation with the University; but they do not constitute University teaching in the proper sense of the word. This part of the work, together with the inspection and examination of schools, has grown and prospered under its energetic Registrar; but it should bear its proper label of "Extension." We cannot have too much of University teaching; but we may have too many degrees, as at Athens, where the chances are that your hotel waiter is a graduate of the University.

The danger is one that is fully realized in the United States—the tendency to divert attention and funds from the pursuit of science as an end in itself and as the guiding principle of University policy. We cannot do better than quote the warning uttered some ten years ago by the President of Columbia University in his Introduction to Paulsen's "German Universities": "The danger consists in allowing the claim that closely specialized work, in a purely technical or professional branch, entered upon without any broad preparatory training whatever, is to be regarded as legitimate University work and entitled to the time-honoured University recognition and rewards." Like Mr. Webb, we desire for London a truly democratic University, but one as far removed from the type of modern Athens as it will necessarily be from the cloistered luxury of Oxford and Cambridge.

In the special branch that concerns us most closely—the training of teachers—the University of London has effected something and will do far more. It has already a Board of Pedagogy, a Professor of Education, and a Day Training College; but, as Mr. Webb calculates, London engages each year fifteen hundred new teachers. There is no reason why all these, or at least the majority of them, should not be brought into connexion with the University. We must multiply our professors and our training colleges, and we must establish a Faculty of Pedagogy, which shall lay down courses that will in time become obligatory for all recognized teachers in London schools.

NOTES.

Sir Donald Currie's munificent gift, not only removing the last financial obstacle to the incorporation of University College with the University of London, but also making welcome collateral provisions of far-reaching usefulness, does conspicuous honour to the donor, and modifies the reproach of wealthy London citizens. The sum of £80,000 will erect the buildings required for the School of Advanced Medical Studies, and a further sum of £20,000 will provide a suitable Nurses' Home in connexion with University College Hospital, together with accommodation for medical students attending poor women of the neighbourhood in the course of their practical study of obstetrics—sites for both buildings having been already acquired. To this £100,000 Sir Donald thoughtfully adds £2,500 for the furnishing and provision of a library, &c., for the Nurses' Home. Only those that have some practical knowledge of the extent and the value of the work done in the Medical School and in connexion with the Hospital can appreciate the importance of Sir Donald's timely and open-handed beneficence.

When one reads of the millions of dollars that rich Americans pour into the treasuries of transatlantic Universities, and reflects upon the vast wealth of the City of London, one cannot but be amazed that University College should have had to wait so long for incorporation in the University. For the College has not lain under the necessity of basing its appeal merely on its hopes for the future, although these could not easily be over-stated: it could point to conspicuous—incomparable—services to the cause of education, not only in London, but throughout the country, and to most extensive and valuable contributions to learning and science generally. There are special classes, too, whose gratitude for its open door (in a dark time when other academical doors were firmly shut in their face) might well have hastened to anticipate any appeal for assistance. The very need of the College has resulted from its eagerness to keep abreast with the times, if not to lead the way. Probably it is not generally known that very few of the professors are endowed at all, and that not a single one of them has ever enjoyed a salary that would be dignified by the name in an American University. Of course, the excellent idea of a Sabbatical year is unknown, but that may be because there is no Theological Faculty. The situation has been anything but creditable to London or to the country; and we trust that Sir Donald Currie's most laudable example will prompt other citizens that have thriven in London to inquire into the facts, and to see that the greatest of our teaching and researching institutions, on its incorporation in the University, be placed on a financial footing reasonably adequate to its aspirations and its capacities.

Mr. Goldwin Smith writes from Toronto to the *Times* (March 12) to express his joy "that Oxford has given up compulsory Greek, at least for Passmen.": "no Passman mastered Greek." He speaks incidentally of Oxford as "set free from her mediæval and ecclesiastical shackles," and at "a juncture which calls for academical statesmanship." At the same time the fruitless newspaper warfare of Oxford dons over "Greek and Natural Science at Oxford" continues to rage in our contemporary's columns. Prof. Case certainly does well to urge that the students should "work harder," and to call attention to the following words of Sir William Huggins:

> Taking a wide view of the whole question, it seems to be eminently desirable that the culture to be derived from classical and literary studies should, as far as possible, be retained, which would become practicable by the introduction into our schools of a much keener devotion to work, together with such improved methods of teaching languages and mathematics as would not only increase the educational value of these studies, but also leave ample time for the teaching of science, no longer, as is now the case, as a subordinate subject to be barely tolerated, but as an integral and essential part of all education, it being understood that such teaching of science is to take the form, as far as possible, of the study of the phenomena of Nature by direct observation and experiment.

Undoubtedly, there is time enough for both classics and

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science if proper methods of teaching were in force under proper organization, and if the men were induced, or required, to work with reasonable application,. We believe with Prof. Case that "boys coming to Oxford and Cambridge would be the better intellectually and morally by working harder and learning both Greek and 'science.'" For the neglect of such inducement or requirement Greek has had to suffer. There is only too much truth in the protest of *Granta*: "You may find students in Edinburgh and the other Universities north of the Tweed. But at Oxford and Cambridge the species is practically non-existent."

Prof. Burnet tells the Classical Association of Scotland that the claims of the classics should be based, not on the importance of their subject-matter, but on their value as a means of training in form. If you found your case on the matter, you will be told that your pupils, "after three or four years' study, are still unable to read Greek or Latin books for pleasure." More than that, we may add, you will be told that the matter is already accessible in English. "Classical education," said Prof. Burnet, "has in the past inspired many with a lasting sense of literary form and a genuine love of good writing." True; but this result is not a monopoly of classical study, nor yet is it in any case the result of classical study alone. The just claim is weakened by extravagant extension. Prof. Burnet counselled classical teachers to "stand up boldly for the formal side of their work"; and this, he added, "means that in the Universities pure scholarship must be ranked higher than what is called research, and that in the schools composition, and especially verse composition, must be restored to its rightful place." Prof. Burnet seems to forget that discretion is the better part of valour. Why will professors, even accomplished classics, persist in spoiling a good case by lack of discrimination?

The Society of Educational Research has exhibited a quite unusual promptitude of discovery. It held its first annual meeting in New York on February 13, when the director of its investigations, Dr. J. M. Rice, the well known editor of the *Forum*, answered the very natural question, "What has the bureau of investigation done?" Thus (according to the *School Journal*, February 27):

> It has been studying the comparative value of methods and has found the true value. Good teaching does not depend upon the method. Our tests have shown that, if you put a good method into a poor teacher's hands, you will have a poor result. If you put a bad method into a good teacher's hands, you will have a good result. Good school work does not depend upon the system of philosophy followed. A good school comes from the development of the power to teach. That is the whole question, and so the power to supervise schools is the great secret. The supervising principal, then, is the most important factor in the school system.

From this statement ("in substance") of Dr. Rice's discovery, we seem to gather that "method" and "philosophy" in teaching are alike exploded, and that "the whole question" is to turn on "the power to teach," under due supervision. "Back of" this whole question, however, there would still appear to be some necessity to find "the power to teach"; and we are not as yet told how it is to be found in the absence of method and philosophy. Are we to be thrown back on the rule of thumb of "born" teachers? Or is the teacher to be "trained" by working as best he may under the critical fire of superintendents? One cannot but suspect the logic of Dr. Rice's demolition of method. The "poor" teacher does not count: and his failure with a good method and the good teacher's success with a bad method alike leave it open to us to hold that a good teacher may be more successful with a good method than with a bad one or none at all. And even a poor teacher will probably do better with a good method than without a method at all.

"O tempora! O mores!" Where is the American journal wherein we can place trust in future? Last month we based some playful remarks about Prof. MacDowell's resignation upon a most reputable American school journal, which now appears to have been misled by the New York *Evening Post*, which President Butler accuses of having printed the story as what the editor calls "very interesting reading" in the face of his personal assurance that it was "wholly false." Prof. MacDowell assures President Butler that "the reported interviews are very incorrect." The press generally may well join Dr. Butler in righteous indignation against the shameless *Post*, and heartily wish with us that they had not touched the wicked thing. We should certainly be surprised, however, to learn that anybody could have taken the story *au pied de la lettre*; and still more to find that any one would seriously regard it as reflecting upon Columbia, or upon Prof. MacDowell either. Probably it would be taken, as we took it, to have been merely the impatient frankness of a man that had very serious views of his work. The real objection would come from the students, and this is not the first time that students have been stigmatized as "barbarians." Columbia still survives!

In the preface to his strikingly able and original work "Buddhist India," Prof. Rhys Davids referred briefly, but pointedly enough, to the extraordinary neglect of Oriental studies in England. At a recent meeting of the British Academy he read a paper on the subject, which is concisely summarized in the *Athenæum* (March 12), but which we hope will not be left in the obscurity of the proceedings of that somewhat mysterious body to whom it was addressed. Without repeating Prof. Rhys Davids's figures of comparison between this country and Germany (which does not possess an India) one can readily agree that "this scandalous state of things" requires a remedy on a comprehensive scale. Dr. Rhys Davids said:

> Meanwhile the main support of Oriental studies was the entrancing interest of the studies themselves. That interest was not philological so much as historical. The philology was an indispensable means to the end, but not the end itself. Oriental study meant the decipherment of half a dozen ancient literatures, each of them full of historical evidence. It was the study of the origins of all the great religions, and the history, through the centuries, of most. It was the study of three at least of the most interesting and original systems of philosophic thought. It was the study of the political movements, the literary achievements, the social and economic conditions among the majority of the human race from the beginnings of history down to to-day. The mine was practically unworked.

A most Philistine exhibition, truly! But, as Prof. Rhys Davids recognized, "the neglect of Oriental studies does not stand alone: it is only one instance of a larger question, of neglected organization, of the consequent overlapping, of inevitable muddle, of continual waste." In fact, the in-

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tellectual interests of the country have no intelligent or forceful leading or backing in the House of Commons; and but little can be effected without the direct or indirect influence of the voting power.

In the forenoon of the fourth day of the recent annual session of the Mahommedan Educational Conference at Bombay, says the *Educational Review* (Madras), Shums-ul-Ulama Moulvie Hafiz Nazeer Ahmed, LL.D., of Delhi, "kept all those who heard him spellbound for nearly an hour" with his "wise, witty, and humorous sayings and recitations in Urdu." So much so that he was brought on again in the afternoon, "and made a further contribution of his witty, wise, and humorous sayings and verses." Whereupon an admirer promptly offered a donation of Rs.1,000 "in token of his joy at the witty addresses of Moulvie Nazeer Ahmed." Would that we had a few English Moulvies of similar potency to effect an advantageous and prompt transfer of coins of the realm—in thousands—to educational movements!

SUMMARY OF THE MONTH.

At the first meeting of the London County Council Education Committee (March 25), Sir William Collins was elected Chairman and Mr. A. J. Shepheard (last Chairman of the Technical Education Board) Vice-Chairman.

In many diverse quarters it has been urged that the scheme of the London County Council for its future Education Committee should be modified so as to provide for the co-optation of persons of experience in education. Sir William Anson stated in the House that the Board of Education had received memorials to this effect from the following bodies and individuals:—

Central Governing Body of the City Parochial Foundation; Women's Industrial Council; Church School Union, Barnes; Mayfair, Curzon Schools; Rev. J. J. Coxhead; Southwark Roman Catholic Diocesan Association; Westminster, &c., Schools Association (Roman Catholic); Miss Helen Conybeare and eight other educationists; Chelsea Borough; University of London; London Progressive Education Council (asking for the co-optation of a large number of women); forty-five prominent educationists; Incorporated Association of Assistant Masters in Secondary Schools; Incorporated Association of Head Masters; Women's Liberal Metropolitan Union (asking also for the inclusion of a large number of women); Kensington Borough; B. J. Smythe, Esq.; City of Westminster; F. Pritchard, Esq.; City of London; Wandsworth Borough; City and Guilds of London Institute.

Dr. Macnamara, M.P., recants the like opinion, which he "ignorantly" held before experience on the Board. He is with the Progressives "heart and soul" in "ruling co-optation down to the narrowest margin"; and to supply driving power he wants increased membership by the election of a third county councillor for each of the fifty-eight areas, "and to these might be added a narrow margin of membership by co-optation."

Sir Norman Lockyer, President of the British Association, has forwarded to the Board of Education a very influentially signed memorial urging amendment of the London County Council scheme "so that the Education Committee may include persons who would be universally recognized as authorities on the needs of the University, the technical institutes, and the elementary and secondary schools." The memorial says:

The Education Committee will have to undertake not only the work of elementary instruction hitherto carried out by the School Board, but it will also have the more difficult task of supplying and aiding the supply of secondary, technical, and higher education, and of promoting the co-ordination of all forms of education in London. The present backward educational position of this country is especially marked in those branches designated "secondary" and "higher." To develop the resources of London in these respects, to raise the standard of secondary education, to provide for the training of teachers for both primary and secondary schools, to organize and support the facilities for University training, and finally to organize a great technical high school in the University and the more strictly technical instruction of the polytechnics, so that the whole may be one educational edifice crowned by the University of London, will be a task of great magnitude, and will require the assistance of persons specially skilled in and acquainted with the needs and conditions of these various grades of education.

The educational deadlock in Wales still continues: Wales will not administer the Act. Under Section 7, Subsection 3, of the Act of 1902, the managers of certain Church schools in Carmarthenshire applied to the Board of Education to determine their differences with the Local Education Authority. Under Sections 16 and 23 (10), the Board exercised their power to "hold a public inquiry." The Carmarthenshire Local Education Authority are alleged to have failed in their statutory duties towards some sixty schools within their area in four points:

(1) Have failed to be responsible for or to control the secular instruction to be given in such schools.—Section 5. (2) Have failed to appoint a manager or managers for such schools respectively.—Section 6 (2). (3) Have failed to maintain and keep efficient such schools or to control the expenditure required for that purpose.—Section 7 (1). (4) Have withheld their consent to the appointment of teachers on other than educational grounds.—Section 7 (1) (*c*).

Mr. A. T. Lawrence, K.C., held the inquiry at Carmarthen on March 24–25. Will the Board *mandamus* the recalcitrant Authority?

The Councils of Cardiff, Swansea, Newport, and Merthyr tried to obtain a *mandamus* (March 4) to compel the Board of Education to adopt their schemes, which did not provide for the co-optation of outsiders other than women. By Section 17 (6), "Before approving a scheme the Board of Education shall take such measures as may appear expedient for the purpose of giving publicity to the provisions of the proposed scheme, and, before approving any scheme which provides for the appointment of more than one Education Committee, shall satisfy themselves that due regard is paid to the importance of the general co-ordination of all forms of education." True, but not before "*dis*approving," which was what the Board did last June. So the Divisional Court refused a *mandamus*, unanimously, and decisively. The Cardiff Committee, who took the lead, have decided not to enter a hopeless appeal. Will they frame a fresh scheme, or leave the Board to apply force? There is said to be a strong feeling in favour of masterly inactivity.

To a deputation from the Association of Technical Institutions, who advocated further representation of persons more directly associated with the work of technical institutions on the Consultative Committee and the Teachers' Registration Council (March 17), Lord Londonderry expressed his sympathy, and promised favourable consideration of the arguments put before him.

In reply to a deputation representative of the Welsh University Colleges, who asked for increased Treasury contributions, the Chancellor of the Exchequer pointed out (March 3) that the increased grant for English colleges was really something in the nature of an equivalent grant for England. Ever since 1885 three Welsh colleges had had £4,000 a year each, while in 1889 on the English list there were eleven colleges with an average grant of £1,336; and in 1903–4 there were fourteen colleges, their average grant being still under £2,000. Further, the conditions laid down for England were far more arduous and exacting than those which had prevailed in Wales; and, while the University of Wales had received a grant of £4,000 a year for many years, no English University, except London, had hitherto been given a higher grant than £2,000. The new grant, if Parliament approved it, would amount for England, excluding Monmouth, to £54,000, for a population of 30,500,000—that is to say, £1. 15s. 4d. per 1,000 of the population; but the existing grants for Wales, including Monmouth—£12,000, for a population of 2,013,000—amounted to £5. 19s. 2d. per 1,000 of the population. The aid which the State gave, he continued, should be in a certain proportion to the aid which was voluntarily provided in the localities, and should be a stimulus to fresh voluntary contributions rather than anything in the nature of a substitute for them. They in Wales ought to get more help from the great industries of the country, and must make further efforts to secure local support if they would justify their claim for any increase. Finally, though he did not desire an immediate answer, Mr. Chamberlain asked whether they would be prepared, whenever they came to ask again for increased grants, to accept the

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same kind of inspection and control which was applied to the English colleges.

Dr. T. Gregory Foster, Secretary of University College, London, and a member of the Mosely Education Commission, delivered an interesting lecture at the College, upon "The Universities and Colleges of the United States of America." The general scheme of education in the States, he said, is that the elementary, grammar, high school and college courses shall occupy four years each, the college course commencing at eighteen, He strongly deprecated the English system of examination conducted by an examiner that knew nothing of the examinee. In America such a state of things did not exist: the person who taught was supposed to be sufficiently qualified to examine. By the English system of examination the teacher lost his individuality, and was tempted to push and develop the most promising of his scholars, who would do the most credit to him, instead of working for the children as a whole. The English system of matriculation, too, had been dealt a severe blow in the States by the American plan of "accrediting." In this way, any high-school scholar who could satisfy the college authorities that he or she had passed the high-school course satisfactorily was immediately received into the college or University. This had the effect of linking up in a most striking fashion the Universities and the schools.

Regarding the King's Scholarships, Sir William Anson made the following statement in the House:—

The following table gives the number of candidates for the King's Scholarship Examination who passed in the First or Second Class at the last two examinations:

	Christmas, 1902.			Christmas, 1903.		
	First Class.	Second Class.	Total.	First Class.	Second Class.	Total.
Men.....	521	933	1,451	550	1,016	1,566
Women ...	1,577	2,959	4,536	1,904	3,432	5,336
Total ...	2,098	3,892	5,987	2,454	4,448	6,902

It must be remembered that the numbers for 1903 include a considerable number of persons who passed in the First or Second Class in 1902, but who entered again in order to secure a higher place. There are also a certain number who are unable to pass the medical examination which is required before admission to a college. In October, 1903, 3,439 students were admitted to training colleges; 1,186 men were admitted, of whom 1,001 had passed the King's Scholarship and 156 some equivalent examination; 2,253 women were admitted, of whom 1,872 had passed the King's Scholarship and 293 some equivalent examination. The remainder in either case were admitted under Articles 115 (*b*) and (*c*). The Board have as yet no accurate information as to the number of places which will be available in October next, but they anticipate that there will be not less than 1,250 places for men and 2,550 for women, or not less than 3,800 in all.

A most varied and interesting exhibition of selected works submitted in competition for London County Council art scholarships and exhibitions (which amount to £1,300 in annual value) was held at the Northampton Institute, Clerkenwell, March 17–19. The examiners this year are Mr. Lewis Day, Mr. George Frampton, R.A., and Mr. George Jack. The award of scholarships will probably be made by the Council in the course of the present month.

At the eighth annual meeting of the Midland Education League, at Birmingham (March 16), the following resolution was carried unanimously:—

That, in order to establish a universal and homogeneous system of national education, the Education Acts should be amended without delay, and the Legislature should provide (1) that the board of managers for each elementary school should contain a majority of members appointed by the Local Education Authority; (2) that, as regards elementary education, the public control of all schools maintained by public money should be uniform and complete, that teachers should be free from the application of sectarian tests at every stage of their training and professional career, and religious instruction (beyond such as is covered by the Cowper-Temple clause) should lie wholly outside the purview of the Local Education Authority; (3) that, as regards secondary education, no institution of a specifically sectarian character should receive aid from the Local Education Authority.

A Conference on Secondary Education, promoted by the University and the City Education Committee, was held at Birmingham on March 19. The training of secondary teachers was a prominent subject—to what extent it should be carried out in training colleges and in schools, and how far it should depend on Government aid. The relative weight to be given to the humanities and to science was also discussed. There was a general feeling that specialization should be deferred till fourteen or fifteen, and be preceded by a sound English education.

The Certificate Examinations of the National Froebel Union in 1903 drew 970 candidates. For the Elementary Certificate, 487 entered; 238 gained Certificates, 4 with Distinction. For Part I. of the Higher Certificate 219 entered and 165 passed; for Part II. 264 entered and 160 were successful, 8 being in the First Class. Reports, papers, and results can be had from the Office, 4 Bloomsbury Square (9d.).

UNIVERSITIES.

(*From our own Correspondent.*)

Oxford.

The term died a natural and quiet death, just when fine weather had set in to make Oxford more endurable. We are now comparatively deserted, except by examiners and examinees, the latter including a large detachment of schoolboys up for Smalls, or else competing in the last large scholarship "group," Magdalen, New College, and Corpus. How these colleges, who generally count on a strong field, will fare now that they come after almost all the other colleges (here and at Cambridge) have had their pick remains to be seen; but, on the face of it, one would think that it was better for both college and schoolmasters that scholars should not be elected nearly a year before they come into residence; certainly schoolmasters know that it is not always very easy to keep up to the mark a youth who, besides all the glamour of sixth form and prefectdom, realizes that he has "arrived."

The debate about examiners in the Theological School ended, as expected, in a victory for the laymen, even though Mr. Benecke, of Magdalen, one of the most distinguished of the non-clerical theologians, was on the side of the angels. The debate was refreshingly free from the acidity which often flavours theological discussions.

We hear that the new Greek-exemption statute has been drafted, but your correspondent has been unable, even by judicious flattery of a member of the Hebdomadal, to discover its terms. Doubtless they will appear in unadorned prose in the first *Gazette* of next term.

Honour Classical Moderations still, despite their critics—and there has been a recrudescence of criticism of late—continue to draw, and there were about two hundred and forty candidates, "besides women and children." Criticism now is directed at the fact that the better class of men could do more than is required, but that the "general books" are too much for the weaker men. If this be so, it might be conceivably possible to arrange that an additional subject should be required from those who aspire to a place in the first two Classes. But we do not believe that they would help matters very much, as most of the candidates believe in their capacity (coupled with luck) to get a Second Class.

The report of the Delegacy for the Training of (secondary) Teachers has been circulated. The scheme has been working for ten years now, and, whatever diverse opinions may be held about the value of pedagogics, there is no doubt that an increasing number of men (and women) are taking the course. This may be due to a certain extent to outside pressure, and be not entirely disconnected from the Registration Act, but the fact remains that last year there were 121 students.

In the Examination for Diplomas nearly half the candidates were rejected—an eloquent proof that the Delegates do not make the examination too easy: a noticeable point, from which the curious may draw what inference they please, is that five of the six who obtained Honours in the examination were women. For ourselves, we believe that women are much more painstaking in the acquisition of information, but less inspiring when they come to impart it; yet that view may be ascribed to masculine prejudice.

Other recent events since your last issue have been the dinner of the Russell and Eighty Clubs, with Mr. Sydney Buxton and Mr. Rufus Isaacs as the chief speakers, and that of the St. Patrick's Club, who were privileged to hear a remarkable speech from Sir Horace Plunkett.

Then Balliol and Christ Church have elected new Proctors to

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succeed Messrs. Haselfoot and Wylie, and have chosen two Wykehamists in Mr. Palmer and Mr. Myres. The former of these was the pioneer of a movement some years ago to abolish Eights Week and combine it with Commemoration Week, maintaining that the Summer Term at Oxford was for many men a mere opportunity of amusement; the latter is now known chiefly as an archæologist and successful digger, but he had a remarkable run of successes as an undergraduate, being, in addition to a classical scholar, a man of science, and passing from a New College scholarship to a Magdalen Fellowship, and thence rapidly to a Christ Church Studentship.

In matters athletic we are rather gloomy. Experts tell us that we must lose the Boat Race, and it certainly is a remarkable thing that the University Eight this year includes no member of either New College or Magdalen, the two head boats on the river.

In the Sports Cambridge will have a complete "day out," with quite a chance of accomplishing a record by "sweeping the board." It looks as if we might even lose the Golf Match. Altogether the epithet "gloomy" is not unjustified, and we can find what comfort we may in the fact that, after all, we did win the Hockey Match, and that, if Cambridge are better boxers, we are better fencers.

The ingenious here, again, might find a text in the last fact for a comparison of the Oxford and the Cambridge "manner."

The Union, after some closely contested elections, has taken to itself new officers. The new President is Mr. Moore, of St. John's, while Magdalen (for the first time, one would almost imagine) provides the new Secretary in Mr. Lygon.

(*From our own Correspondent.*)

Cambridge.

THE King's visit to Cambridge was the one bright spot in what otherwise would have been the dullest term on record. For weeks we had quite a large gang of courtiers in making, who provided almost as much amusement to the plain outsiders as the courtiers in being of the great day itself. Your readers by this time will doubtless consider the royal visit as a bit of ancient history; but in Cambridge we so seldom catch sight of our ruling families that we cannot pretend to the *blasé* indifference of the Piccadilly policemen who were imported to keep us in order. The King and Queen were received at the station by Mr. Austen Leigh, acting as Deputy Vice-Chancellor. An escort of the mounted infantry section of the University Volunteers rode with the Royal carriages, which, unfortunately for the spectators, were closed. The Senate House was first visited, the Queen and the Princess Victoria taking their places in the procession of Heads of Houses and Doctors which defiled through Senate House Yard to the Senate House itself. Then Dr. Chase, the Vice-Chancellor, having conducted the Royal party to their seats, read an address of welcome, to which the King read his reply. It was noticed that every word was audible throughout the entire building, though our professional Public Orator thinks it necessary to shout and scream to obtain the same effect. A disquisition from the Vice-Chancellor on the history of the new buildings, and an adjournment was at once made to the Fitzwilliam Museum for lunch. First-class guests fed with the King and Queen; second-class at King's; third-class at home; while fourth and no class had their bun and ginger-beer or ale and cheese at the nearest inn.

The afternoon ceremony was got up on the model of Buffalo Bill's show. The arena was guarded by the University Volunteers; and the King's loyal subjects, if provided with tickets, filled the stands opposite and at the side of the new buildings. Nothing particular happened. The King and Queen looked in at the various museums, unveiled the statue of Prof. Sedgwick, said a few graceful things to the representatives of the great professor, and shortly after four o'clock left for the station with the same escort as before. Dr. Chase throughout gave a real good example of dignified yet easy grace, and all the undergraduates thought the King a model for imitation in all he said and all he did. No knighthoods were knocking about, and they say some people are sorry therefor.

Our upper circles have been so disturbed by all this pageantry that academic questions have, for the time, sunk to rest: the Greek controversy slumbers; the historians, the moralists, and the economists lie down together in prehistoric peace.

One little excitement we had when the Senate, by a large majority, gave an emphatic negative to the proposal of the Financial Board to sell part of the Botanic Garden to the Educational Committee of the County Council. The honours of the controversy certainly rested with Mr. Bateson, of St. John's, whose apt retorts not only crushed the opposition, but won votes for his own side. The policy of robbing Peter to pay Paul has now received an effectual buffet.

The University, after much pomp and parade in the matter of worrying the Government to let us have our own way in the training of our own candidates for the Army, have solemnly appointed a Board of Military Studies. It is absolutely certain that not one sixpence will be expended by the University or the Colleges in furthering the cause of military education: the expenses and risk will fall upon private individuals, but the glory will go elsewhere.

The falling-off in the number of medical students is considerable; but it may be conjectured that the fall is among the weaker brethren: fees may fail, but efficiency will be maintained.

Our boat, before these lines get into print, will have settled the momentous question as to which University has the worse crew this year. That distinction, indeed, will probably rest with Oxford. It would be interesting to see the Oxford boat with a three-lengths start matched against the college crew which Third Trinity sent to Henley last year.

Politics are slumbering. Sir John Gorst, in spite of strong hints, wishes to keep his seat; and the Cambridge caucus, unless they run a man like Mr. Alfred Lyttelton, who would command the votes of the Church party and the Ministerialists alike, may land us in a disaster if they allow an irresponsible politician like Sir J. Gorst to represent a University in which neither party specially desires him as a representative.

London.

THE Senate resolved (February 24): "That the Board of Education be informed that the Senate, while in no way wishing to cause any postponement of the appointed day, think it desirable, in the interests of education in London, that the University should be closely associated with the Education Committee to be appointed by the London County Council, and that persons experienced in education should be members of that Committee." [Elsewhere we refer to Sir Donald Currie's splendid gift (£102,500) to the University and to University College.]

Manchester.

THE number of students this session to present date is given thus:—Arts, Science, and Law Faculties (including 234 women students), 866; Medical Faculty (including 10 women), 344. The number of students at the corresponding date last year was:—Arts, Science, and Law Faculties (including 200 women students), 820; Medical Faculty (including 9 women students), 330. The cost of the new bacteriological laboratories is almost met; but from £5,000 to £10,000 is wanted for additional accommodation for botanical teaching. There were 51 students in Botany in 1902; now there are 275. The formal opening of the Schunck Laboratory will take place in July.

Birmingham.

ON the rumour of the impending resignation of Dr. Reginald Buller, B.Sc. (Lond.), Ph.D. (Leip.), D.Sc. (Birm.), assistant to the Professor of Botany, Prof. Hillhouse is reported to have remarked to a pressman "that most members of the professorial staff are deeply concerned as to the nature of the prospects open to the junior staff of the University. The higher positions open to them are very few in number, and thus it may come about that a man of brilliant attainments may for years be in receipt of a salary little or no better than that of a fairly good clerk, or, perhaps, indeed may never attain to a higher post at all." No doubt; but the trouble is not confined to Birmingham.

Leeds and Sheffield.

THE following letters have been addressed (March 3) by the Clerk of the Privy Council to the agents of the Yorkshire College and of Sheffield University College. To the Yorkshire College:

The Committee of Council have carefully considered the statements made at the Conference on the 2nd inst., and direct me to say that, under all the circumstances represented to them, they see no reason to modify their opinion that the proper title to be assumed by a University with its seat in Leeds is "The University of Leeds." In coming to this decision, however, their Lordships are not insensible to the valuable work done by the Yorkshire College for the county at large and to the significance of the arrangements by which representatives of the county and of the county boroughs are to be given a share in the government of the new

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University. But they feel obliged to recommend to His Majesty the restriction of the title as aforesaid, both on the score of precedent and convenience.

To Sheffield University College:

Their Lordships have considered the case presented on behalf of the petition of the University College of Sheffield praying for the grant of a charter incorporating a University in Sheffield and the resolutions in its support adopted by various bodies. The Committee understand that the promoters are engaged in raising a sum of £170,000 for the purposes of the University, by the appropriation of part of which new buildings of a suitable character will be in readiness by the spring of 1905, and that, in addition to a considerable yearly sum which the City Council have promised to provide, material assistance may be looked for from the County Council of the West Riding of Yorkshire and probably from Derbyshire and the large urban communities in the neighbourhood of Sheffield. In these circumstances their Lordships are willing to entertain favourably the application before them, and, subject to a substantial realization of the hopes mentioned, will be prepared in due course to recommend to His Majesty the grant of a charter in general conformity with the draft accompanying the petition, but it will be necessary for the promoters to submit a draft of the statutes, which must be associated with the charter. In their preparation care should be taken to include all such matter as may properly be required to give effect to the said instrument, the terms of which will have to be altered in certain respects.

About £12,000 a year has been promised for Leeds University purposes, but the power to utilize this sum effectively will largely depend on the raising of sufficient capital to carry out the building extensions, which will cost £70,000 (partially, but to a considerable extent conditionally, promised). £100,000 really is wanted; donations come to £40,000. A strong committee has been appointed to raise the full sum required.

Glasgow. Commemoration Day will be celebrated on April 19. Prof. Sir William Ramsay, University College, London, who commenced his teaching career as member of the staff at Gilmorehill, will deliver an oration on Joseph Black, Lecturer on Chemistry 1756–66 in the old College, and enunciator of the doctrine of latent heat.

CURRENT EVENTS.

Fixtures. Prof. J. Adams will deliver a lecture on "How to be Interesting in Teaching" at the College of Preceptors on Wednesday, April 20, at 7.30 p.m.

* * *

Mons. Léon Duchemin will lecture on "Flaubert" to the Société Nationale des Professeurs de Français en Angleterre at the College of Preceptors on April 30, at 4 p.m.

* * *

Prof. Adams will lecture on "Teaching as a Fine Art" at Royal Holloway College on April 19 at 8 p.m. Cards of admission from the Secretary up to April 17.

* * *

The University of London will hold a School-leaving Certificate Examination beginning on July 4 (in addition to that held in connexion with the ordinary Matriculation Examination beginning on June 13). Any school presenting pupils must submit a general statement of the complete course of instruction it gives, and also the curriculum of study pursued by the candidates. Further information and forms of entry from the Principal. Entries must be made for the June examination before May 1, and for the July examination before June 1.

* * *

The University of London has arranged the following central courses (Extension) for the summer term:—(1) Five lectures on "General History (Part I., Antiquity, 5,000 B.C. to the Fall of the Roman Empire)," by Dr. Emil Reich, at the University, on Tuesdays, at 8 p.m., beginning April 19, and repeated on Wednesdays, at 3.30 p.m., beginning April 20 (the last on *Tuesday*, May 17, 3.30 p.m.). (2) Five lectures on "The Making of Modern Europe," by Dr. J. Holland Rose, at Gresham College, on Tuesdays, at 8 p.m., beginning April 19. (3) Five lectures on "The Fundamental Principles of Evidence and Reasoning," by Dr. Emil Reich, at Gresham College, on Thursdays, at 8 p.m., beginning April 21.

* * *

In Easter term special courses will be given at Bedford College, London, by Alexander Paine, M.D., D.P.H., on Bacteriology (with practical work); Percy J. Harding, M.A., on "The History of Geometry"; and J. W. Allen, M.A., on "The History of Political Ideas."

* * *

The Cambridge University Extension Summer Meeting will migrate this year to Exeter, July 29 to August 23. The appropriate main subject will be "The Age of Elizabeth," with local illustrations of (1) the History of the British Navy; (2) Botany, Geology, and Meteorology; and (3) Antiquarian and Literary Associations of the South-West. There will also be Theological courses, special courses for foreign students, and a Social and Educational Section, with practical classes, primary and secondary. The inaugural address will be delivered by a Western Bishop (Bristol), and among other lecturers will be Lord Brassey and Admiral May (if in England at the time), Lord St. Cyres, the Bishop of Exeter, Sir William White, K.C.B., Prof. Laughton, Mr. Sidney Lee, Prof. A. J. Grant, Dr. J. C. Bridge, Prof. Kirkpatrick, Prof. Ramsay, Prof. Gollancz, Mr. J. A. R. Marriott, Mr. P. H. Wicksteed, and Principal Clayden. Conferences will be held, and there will be every facility for visiting places of historical and scientific interest. Particulars from Rev. D. H. S. Cranage, Syndicate Buildings, Cambridge.

* * *

A vacation course in Geography, similar to that of August, 1902, will be held at the School of Geography, Oxford, during the first sixteen days of August next, provided that a sufficient number of students send in their names to the Curator, School of Geography, Oxford, by June 1. The fee, £3. 3s., includes use of apparatus for practical classes. A provisional programme will be sent in May to all who forward a stamped addressed envelope to the Curator.

* * *

The Teachers' Guild has arranged summer holiday courses at Tours, Honfleur, Santander, and Neuwied. The courses will commence early in August, and will extend over three weeks; at Honfleur about four weeks. Application should be made: for course at Tours, to Mr. A. Wilson Green, M.A., Blackheath School, S.E.; for Honfleur, to Mr. E. W. Hensman, M.A., the Rawlins School, Quorn, Loughborough; for Santander, *probably* to the Rev. H. J. Clayton, M.A., 21 Alexandra Road, Great Crosby, Liverpool; and for Neuweid, to Mr. J. W. Longsdon, M.A., 6 Claremont Gardens, Surbiton.

* * *

A list of twenty-three summer holiday courses on the Continent may be obtained free on application to the Board of Education Library, Whitehall.

* * *

The University of Dijon offers a Vacation Course for foreign students, July 1 to October 31, at 50 fr. *Certificat d'assiduité.* Address—July and October, M. C. Cestre, rue Le Nôtre 7; August, M. Lambert, rue Berbisey 10; September, M. Bernard, rue Saint Philibert 44.

* * *

The International Congress on the Teaching of Drawing will be held at Berne on August 3–6. Application forms and particulars from Miss Ethel M. Spiller, 11 Highbury Crescent, N.

* * *

The triennial Greek Play at Bradfield College—this year the "Alcestis" of Euripides—will be performed on June 21, 23, 25, 27, and 28, by the boys of the College exclusively. All the conditions of Greek art will be observed.

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The International Printing, Stationery, and Allied Trades' Exhibition will be held at the Agricultural Hall, Islington, from April 30 to May 14. The products of the various trades will be exhibited, as well as the machinery and appliances used.

* * *

An exhibition of (over 100) historical portraits of persons that died not later than 1625, in the possession of the University, the Colleges, and the City of Oxford—together with maps, plans, and views illustrating the topography and architecture of the city—will be held in the East Writing School during the Easter vacation and the first five weeks of the summer term. Opening day (it is hoped), April 13.

* * *

The provisional lists of teachers registered in Column A and Column B of the Teachers' Register will be open for public inspection and copying, free of cost, during one calendar month commencing on Monday, March 21, 1904, at the Offices of the Council, 49 and 50 Parliament Street, Westminster, S.W. (See advertisement, page 167).

Honours.

Aberdeen University proposes to confer the honorary degree of D.D. on six clergymen, two of whom are sons of former Professors of Divinity in the University;

and the honorary degree of LL.D. on the Rev. Thomas Davidson Christie, Principal of the College of Tarsus, Asia Minor; Charles James Cullingworth, M.D., St. Thomas's Hospital; Wyndham R. Dunstan, Director of the Imperial Institute; George Robert Elsmie, C.S.I.; the Right Hon. C. T. Ritchie, M.P., Lord Rector of the University; William Watson, the poet; and Sir George Watt, M.B., C.I.E., of the Industrial Museum, Calcutta.

* * *

Glasgow University has resolved to confer the honorary degree of D.D. on several clergymen, including the Rev. A. J. Maclean, Principal of the Episcopal Theological College, Edinburgh, and the Rev. Prof. H. Williams, M.A., Theological College, Bala;

and the honorary degree of LL.D. on Mr. J. H. Choate, United States Ambassador; Mr. G. F. Deacon, civil engineer, of London; Sir L. J. Grant, Professor of Public Law in the University of Edinburgh; Mr. J. Honeyman, architect, Glasgow; Mr. J. H. Muirhead, Professor of Mental and Moral Philosophy in the University of Birmingham; Dr. W. Stirling, Brackenbury Professor of Physiology and Histology at Owens College, University of Manchester; and Sir William Taylor, M.D., Director-General of the Army Medical Service.

* * *

At University College, London, the following graduates have been elected Fellows of the College:—(1) in Arts and Law: Margaret A. Gilliland, M.A., and Marie A. Lewenz, M.A. (2) In Science: Florence Buchanan, D.Sc.; A. K. Coomara-Swamy, B.Sc.; and Samuel Smiles, D.Sc. (3) In Medicine: Charles Bolton, M.D., B.S., B.Sc; Joseph Shaw Bolton, M.D., B.S., B.Sc.; and F. W. Mott, M.D.

The following were elected Life Governors:—(1) "Persons having special claims in consequence of benefits conferred upon or services rendered to the College": Prof. Osbert Chadwick, M.Inst.C.E., M.Inst.M.E.; Prof. Sir John Macdonell, M.A., LL.D., C.B.; Mr. Charles Hawkesley; Mr. T. W. P. Lawrence, M.B., F.R.C.S.; and Miss Rosa Morison. (2) "Persons distinguished in public life or for their services in the cause of education": Sir Francis Mowatt, Mr. R. K. Gray, Mr. J. R. Macdonald, Mr. Felix Schuster, and Mr. P. Bence Trower.

* * *

The Warden of All Souls (Sir William Anson) succeeds the late Mr. Lecky as a Trustee of the National Portrait Gallery.

Principal Lloyd Morgan, University College, Bristol, has been offered the honorary degree of LL.D. by the University of Wisconsin. He has been unable to accept the honour because he cannot attend in person on June 9—a condition of conferment.

* * *

Oxford University has conferred the honorary degree of M.A. on Mr. T. W. Taphouse, of Oxford, in recognition of his researches into Early English music.

* * *

Cambridge University has resolved to confer the honorary degree of D.Sc. on Wilhelm Ostwald, Professor of Chemistry in the University of Leipzig.

* * *

The Rev. Bertram Pollock, D.D., Head Master of Wellington, has been appointed a Chaplain in Ordinary to the King, in room of the late Canon Ainger.

Endowments and Benefactions.

The King has been pleased to promise a contribution of 100 guineas to the proposed Institute of Medical Sciences in case the project should be carried out.

* * *

The Girdlers' Company have granted £100 a year for three years towards the teaching of economics in the University of Cambridge.

* * *

Gonville and Caius College, Cambridge, has received from an anonymous member of the society a gift of £2,000, with the suggestion that the money should go to the post-graduate studentships fund, for the benefit (in the first instance) of students of languages or of archæology.

* * *

The Goldsmiths' Company are handing over to the University of London their New Cross Institute—site (some seven acres), buildings, and equipment.

* * *

Aberdeen University has received £4,000 for establishing a Law Lectureship, from the estate of the late Mr. John Clark, Advocate in Aberdeen.

* * *

Among recent donations to Owens College are: £300 from Mr. F. Rothwell to the Library; £50 from Sir William Agnew towards the Chair of Architecture; £100 annually from Mr. Edward Behrens and £50 from Sir William Mather to the Chair of Education; £400 a year for five years from an anonymous donor for the Faculty of Theology; £2,800 for the Faculty of Commerce; and £285 as a memorial to Prof. Adamson for the establishment of a lectureship.

* * *

Liverpool University has recently received £1,000 to found a scholarship in Economics in memory of the late Mr. H. W. Meade-King, from his family; and fellowships in Dermatological and Surgical Pathology, £100 each for three years (in the first instance), from Dr. Stopford Taylor and Mr. Thelwall Thomas.

* * *

Birmingham University has received from Mr. Joshua Williams the remainder of the lease (72 years) of a house, with $3\frac{1}{2}$ acres of land, close to the new University site.

* * *

The Trustees of the Gilchrist Educational Trust have made a generous donation to Bedford College Library, for the purchase of classical works of reference, and for an extension of the Library attached to the Training Department for Secondary Teachers.

* * *

The Drapers' Company, in addition to their previous gift of £10,000, have promised £5,000 to the building fund of University College, Cardiff.

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Mr. Robert Davies, Bodlondeb, has given £1,000 to the new buildings fund of University College, Bangor.

* * *

Mr. David Davies, Plasdinam, who gave £25,000 to Aberystwyth University College, has now offered £12,000 for the erection of a theological college at Aberystwyth—uniting Bala and Trevecca—for the whole of the Calvinist Methodist connexion in Wales.

* * *

Under the will of the late Mr. James A. Woolson, Boston University will ultimately receive £120,000; Radcliffe College, £60,000; and the Wesleyan Academy, Wilbraham, Mass., £60,000.

Scholarships and Prizes.

Jesus College, Cambridge, offers two choral exhibitions, £30 each for three years. Examination, June 21–22. Particulars from Mr. Arthur Gray, Senior Tutor.

* * *

Queens' College, Cambridge, offers six scholarships, £25 each for three years, open to natives of Wilts, Somerset, and Gloucester (including Bristol); and four open scholarships. Examination in May. Particulars from the Registrar.

* * *

Pembroke College, Oxford, offers five open classical scholarships, £80 each, without limit of age, and (perhaps) an exhibition, £45. Examination begins May 10, at 9.30 a.m. One of the scholarships is restricted to persons needing aid to come to the University, whereof evidence is required.

* * *

Royal Holloway College offers eleven entrance scholarships (two of £75 a year, two of £60, four of £50, two of £40, and one of £35) tenable three years; examination, June 27 to July 2. Particulars and forms of entry to be obtained from the Secretary of the College. Forms to be returned (with fee of £1) by June 1.

* * *

At Bedford College, London, the Reid Fellowship will be awarded in May; and a Reid Entrance Scholarship in Arts, £31. 10s. for three years, and a Pfeiffer Entrance Scholarship in Science, £48 for three years, in June. Particulars from the Principal.

Appointments and Vacancies.

The Master of Trinity College, Cambridge, will receive applications for the Clark Lectureship in English Literature (£200; 12 lectures) up to April 21.

* * *

Dr. Anthony Traill, LL.D., M.D., &c., Senior Fellow, Trinity College, Dublin, has been appointed Provost of Trinity, in succession to the late Dr. Salmon.

* * *

The Rev. E. W. Watson, M.A. of St. John's College, Oxford, has been appointed Professor of Ecclesiastical History in King's College, London, in succession to Dr. Collins.

* * *

At University College, London, Dr. G. Dawes Hicks has been appointed Professor of Moral Philosophy; Dr. E. R. Edwards, Lecturer in Phonetics for three years; Dr. H. Batty Shaw, Lecturer in Therapeutics; Mr. Percy Flemming, B.S., M.D., Professor of Ophthalmic Medicine and Surgery, and Surgeon to the Ophthalmic Department of the Hospital.

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The Rev. A. S. Peake, M.A., Lecturer in the Lancashire Independent College, has been appointed Professor of Biblical Exegesis in the University of Manchester.

Mr. Stanley Horsfall Turner, M.A., Assistant Professor of Political Economy in the University of Glasgow, has been appointed Lecturer on Political Economy in the University of Aberdeen.

* * *

Miss Lilian Tomn (Girton), Lecturer at University College School, has been appointed to the Teachership in Modern Economic History, vacated by Mr. Hewins, at the London School of Economics and Political Science.

* * *

Mr. Henry V. Weisse, M.A., Head Master of the Lower School, Rugby, has been appointed Head Master of the Boys' Schools of the Liverpool Institute, in succession to Mr. Fletcher.

* * *

Mr. H. A. Garratt, Head of the Engineering Department at the Northern Polytechnic, has been appointed Principal of the L.C.C. Poplar Technical Institute.

* * *

Mr. G. H. Burkhardt, M.Sc. (Durh.), Director of Higher Education at Rotherham, has been appointed Principal of the Swindon and North Wilts Technical School.

* * *

Mr. Sidney Skinner, M.A., of the Cavendish Laboratory, and Director of Natural Science Studies at Clare College, Cambridge, has been appointed Principal of the South-Western Polytechnic, Chelsea.

* * *

Mr. Frank H. Newman, of the Technical College, Norwich, has been appointed Educational Adviser to the Durham County Education Committee, and Mr. Arthur James Dawson, of Neville's Cross, Durham, has been appointed Secretary for Elementary Education.

* * *

Mr. E. S. Davies, M.A. of Jesus College, Oxford, has been appointed Inspector for purposes connected with the special work of the Higher Education Sub-Committee of the Kent Local Education Authority.

* * *

Dr. Adam Wilson retires from the classical mastership of the Dundee High School, under the age limit of sixty-five, after thirty-one years' service

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Mr. William Henwood, M.A., Head Master of Theobald's Grammar School, Needham Market, has been appointed Head Master of Bromyard Grammar School.

* * *

Mr. James G. Greenhalgh, M.A., B.Sc., mathematical master, Hulme Grammar School, Oldham, has been appointed Head Master of the Higher Grade and Secondary School, Halifax.

* * *

Mr. C. W. Milligan, B.A., has been appointed assistant in the Day Training College for Men, Birmingham, in place of Mr. G. D. Timmins, resigned.

* * *

Mr. William W. Vaughan, M.A., assistant master, Clifton College, has been appointed Head Master of Giggleswick School.

* * *

Mr. Thomas Young, M.A. (Oxon.), B.A. (Lond.), assistant master, Trent College, Derbyshire, has been appointed Head Master of Green and Sea Point High School, Cape Colony.

* * *

Mr. Ernest J. Bonnor, M.A., assistant master, Bradford Grammar School, has been appointed Head Master of Rivington Grammar School, Lancashire.

Literary Items.

The *National Review* (March) has a very interesting budget of "Early Recollections of Mr. Lecky," by "A College Friend."

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We all like to look on "The Better Side of Things," and Messrs. Mowbray are going to encourage the sentiment by an inevitable "series" so-called, readable and cheap. They will exhibit "The Better Side of Marriage." "The Better Side of Life," and even "The Better Side of Death." They say nothing of a Low Exchequer, of Mothers-in-law, or of the East Wind—as yet.

* * *

Messrs. Longmans have in the press yet another volume by the late Bishop Stubbs—thirty-four "Lectures on European History, 1519-1648"—which will be cordially welcomed by all historical students.

* * *

The Cambridge University Press announces the first volume of a translation of the "Digest" of Justinian, by Mr. C. H. Monro, who has already published several isolated "Titles" with translation and notes. The work is much wanted for the real study of Roman law.

* * *

The next volumes of the "Cambridge English Classics" will be "The English Works of Roger Ascham," edited by Dr. Aldis Wright; and "The Poems of Richard Crashaw," edited by Mr. A. R. Waller.

* * *

In the *Independent Review* for March Mr. W. Lewis Jones describes "The Educational Crisis in Wales," and Prof. J. G. Robertson writes instructively on "Georg Brandes."

* * *

Dr. Holland Rose contributes a timely and effective article on "The Prussian Co-operation at Waterloo" to the *Monthly Review* for March.

* * *

The *Preparatory Schools Review* (March) says the scheme for a Common Entrance Examination is taking shape, and it is hoped that the first examination may be held during the summer term. It is intended to give all schools belonging to the Association and containing twenty-five boys the privilege of holding the examination in their own schools—a concession suggested by the Committee of the Head Masters' Conference. The *Review* contains some excellent addresses and articles.

* * *

In the *Oxford Magazine* (March 9) "S.," writing suggestively on "The New University of London," says: "The new ideas have assumed definite and visible shape; they are embodied in the eight Faculties of Theology, Arts, Law, Music, Medicine, Science, Engineering, and Economics, which constitute the ultimate basis of the teaching University." We confess that to our vision at least the Faculty of Law has not "assumed definite and visible shape." Is there such a thing in fact? And, if not, why not?

* * *

The *Teachers' Guild Quarterly* (March 12) contains, with other interesting matter, Sir Oliver Lodge's Presidential Address.

* * *

The publisher of the *Hour Glass* (the transformed *Golden Penny*) will, on application, send parcels of copies for school use free and carriage paid.

* * *

The Board of Education, having definitely decided not to print the Official Register of Teachers, the editor of the *Schoolmasters' Yearbook* has decided to publish the list of secondary teachers (masters and mistresses) in Column B, correct up to March 31, 1904—some 5,400 entries with the particulars recorded in the official register. It will be issued shortly by Messrs. Swan Sonnenschein & Co.

General.

Prof. Simpson has been presented with a silver inscribed inkstand by his fellow-members of the Liverpool Architectural Society, on his exchanging the Professorship of Architecture in Liverpool University for the Chair of Architecture in University College, London.

* * *

Prof. Butcher has been presented with a testimonial by his Edinburgh pupils past and present.

* * *

Cambridge University has established a Lectureship in Economics for three years on the strength of the Girdlers' Company's grant of £100 a year for that period.

* * *

The Indian University Bill has been passed by the Viceroy's Legislative Council. The Viceregal resolution to abolish competitive examinations for the public services (not, of course, the Indian Civil Service), and to substitute selection of candidates on probation, seems a gravely retrograde step.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—Ed. *E.T.*]

THE TEACHING OF BOTANY.

British Association Committee's Report.

To the Editor of "The Educational Times."

Sir,—It was not until some time after the publication of the December number of *The Educational Times* that I saw Prof. Henslow's article criticizing the recent Report of the British Association Committee on the Teaching of Botany in Schools. I shall be glad if you will allow me to state the following facts.

The Report does not consist of contributions by "three independent writers," Prof. Miall, Mr. Seward, and myself, but is the Report issued as approved by the Committee (consisting of Prof. Miall; Mr. Harold Wager; Profs. J. B. Farmer, J. R. Green, T. Johnson, Marshall Ward; Dr. Kimmins; Mr. Seward; and myself), with an independent contribution by Mr. Seward on "Inquiry in the Botanical Class," and one by myself on "School Gardens." I am responsible for the remarks on excursions, collecting, systematic botany, filling up of schedules, &c., only so far that I am a member of the Committee that issued the Report. I may say that I do not "despise" floral schedules; but I think many other branches of botany, such as experimental work in connexion with the food of plants, pollination, &c., more important.

In connexion with Prof. Henslow's remarks on our school gardens, I should like to say that the study of botany and the study of horticulture *do* go on together. For example: before classification is taken the girls draw from Nature and describe the principal plants belonging to certain orders, and in the forms where we study classification (namely, those preparing for the Junior Cambridge and London Matriculation Examinations) the girls own order beds, and try to obtain as many plants belonging to those orders as possible. To take, for example, order *Solanaceæ*, quoted by Prof. Henslow, the girls who owned that order bed last year did not *only* grow potatoes, but also tobacco plants, winter cherry, bitter-sweet, thorn-apples, tomatoes, &c., and all these types were studied. More potatoes and tomatoes were grown than other plants belonging to the order; but this was done partly so that the girls might be less ignorant of the growth of ordinary vegetables, and partly on account of the great interest taken in growing vegetables and sending them in to the school dinner.

Again, in order *Leguminosæ*, large quantities of peas and beans were grown; but other plants were present, such as broom, lupins, clover, vetches, goat's rue, medick, rest-narrow, astragalus bird's foot, &c.

In conclusion, I may say that I have no doubt that the Committee on the Teaching of Botany in Schools will carefully consider the criticisms and suggestions made by Prof. Henslow.—I am, &c.,

Lilian J. Clarke.

James Allen's Girls' School, S.E.,
March 12, 1904.

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GENERAL HISTORY IN SECONDARY SCHOOLS.

LECTURE BY EMIL REICH, DOCTOR JURIS.

AT a joint meeting of members of the College of Preceptors and of the Assistant Masters' Association, held at the College of Preceptors on March 23, Mr. H. W. EVE, M.A., F.C.P., in the Chair, Dr. EMIL REICH delivered a lecture on "The Necessity of introducing the Study of General History into Secondary Schools on the basis of Geo-politics and Psychology," as follows:—

I am very sensible of the honour done me by this College and this Association in asking me to speak before them to-day. I feel especially honoured because I know that this invitation is not a mere invitation to lecture: most of you have attended so many lectures that the very name must begin to make you feel uncomfortable. No; what you would have of me is a candid expression of opinion on a subject which lies very close to my heart. There is no modification in the present system of secondary education which I should welcome with keener delight than an introduction into the curriculum of a regular course of general history. I feel sure you will credit me with perfect candour when I say that this desire is not the outcome of any blind infatuation for Continental methods of teaching. At other times, both on paper and by word of mouth, I have pointed out many grave defects which mark Continental education. The introduction of the study of general history into English secondary schools would, I feel, act as the necessary corrective of a system whose undoubted excellences in other directions nobody can fail to recognize.

Frequent discussion of the matter with friends and acquaintances has led me to certain conclusions. It is to be feared that only the vaguest, most indefinite, and illusory notions are generally current even amongst well educated and well read people as to the true nature of general history. It is essential, then, that I should first draw you a very clear picture of what I understand by the term, and that I should then, and then only, proceed to point out why I think that a course of general history should be added to the existing educational programme.

GENERAL PRECEDES PARTICULAR.

It is almost a commonplace to say nowadays that the study of the general must precede the study of the particular. But abstract statements of this kind are often allowed to pass for truth, not because they appear to be obviously right, but because their bare and abstract form does not excite any questionings. I should like to give you a few examples which will bring home this law in more tangible form. To take an illustration from everyday life, what artist, what draughtsman is there who would for a moment think of filling in the details of his figures before he had first sketched the outline? It is quite evident that he must first draw his outline. In philosophy, our every act of judgment proceeds from general to particular. It is the direction followed by our thoughts, and it is the direction which we must follow in passing judgments. Consider such a simple phrase as "This table is beautiful." It is quite clear that we must have some general idea of "the beautiful" before we can proceed to make a limited statement involving that idea.

ILLUSTRATION FROM THE NATURAL SCIENCES.

However, to turn from the abstract principles of epistemology to fields more practical, and reflect upon the growth of all modern sciences—first of the purely natural sciences, and then of those which deal with the humanities. No science can for a moment be called systematic unless it contains what the Germans call a "General Part," an *allgemeiner Theil*, in which are laid down the general facts and principles which will be found to hold good throughout the subject-matter. Following this general part comes the second part, dealing with particular phenomena. Try to imagine what physics would be without its general part: it would be an absolute impossibility. Perhaps one of the principal reasons why in the Middle Ages and in ancient or classical times so little headway was made in physics proper was because those

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times ignored, or, rather, had wrong ideas about, the general physical properties of bodies. They did not understand the general principles of inertia, gravitation, fall, rigidity, &c. When, in the seventeenth century, these general qualities were laid down correctly by Galileo and Descartes, Newton, Huygens, and many others, then, of course, physics started along that glorious career of which we cannot even now foresee the goal. Even so with physiology: it owes an immense debt to those great men who laid down its general principles. The year when the first volume of Albrecht von Haller's "Elementa Physiologiæ" was published marks the point from which the real development of modern physiology began: when these principles were supplemented by the "General Anatomy" of Bichat, one of the great lights of science which shone to be extinguished by an early and tragic death, and when thereto had been added the cell theory of Schwann, then both physiologist and biologist had a firm basis upon which to work, and we have long seen, and see every day, to what results they are attaining.

Illustration from the Humanities.

If the preceding remarks hold good for natural science, they apply with tenfold force, and receive tenfold confirmation, in the history of the humanities, or sciences dealing with the history of man. It is well known that in the nineteenth century, principally through the influence of the so-called Historical School, law—and especially Roman law—became a branch of science so systematic and so exact that it has long ago merited the famous eulogy of Leibniz, who said that mathematics can alone compete in point of systematic *finesse* with Roman law. This high perfection was rendered possible principally by the fact that the modern "civilians," following the example given by Donellus in the sixteenth century, have done their utmost to bring the general part of law to its most technical and definite expression. In innumerable legal transactions arises the question as to the beginning, as to the technical conditions under which any jural relation arises or expires. This is, of course, essentially a question belonging to the general part. Or, again, we are confronted with the question as to who can perform a legal action (jural personality). This is also a question of general nature. But until Savigny (from 1840 to 1851) drew up his great work, "System des römischen Rechts," it had never been satisfactorily treated. Yet the whole of Savigny's eight volumes, treating only of the general part of civil law, are highly technical: how technical, and what that treatment is, and what an immense knowledge it necessitated, a glance at any one of its pages will suffice to show. It is from Savigny's book, and a few similar works by other great civilians, that dates the scientific treatment of Roman law. And it is from that time alone that the study of particular branches of Roman law has been pursued with profit. English law has as yet no general part, and its chaos is proverbial. The reasons which tend to the preservation of that chaos are at present beyond our subject; but the day will come when a scientific and disinterested jurist will arise and will write that general part of English law.

To take an analogous subject, namely, politics. It is superfluous to insist that the study of general politics must of necessity precede that of particular politics, and it has become almost a triviality to say that the student of politics must begin with the reading of Aristotle, Machiavelli, Hobbes, Montesquieu, Rousseau, and similar great thinkers on general politics.

When we come to philology we have our most clinching argument. The spectacle of the early attempts at philology provokes a smile nowadays, even when they were made by such eminent scholars as Scaliger and Casaubon. Their vain attempts to solve some of the knotty problems of Greek and Latin by quite irrelevant appeals to Hebrew are almost touching in their *naïveté*. It was not until the foundation of the study of comparative philology in its general principles by Bopp and by Pott—not until they had pointed out the guiding threads which control all Indo-German linguistics—that any real progress was made in the philology of individual European languages.

History must follow the Scientific Path.

Why, then, when a scholar attempts to know something of general history should it savour of an arrogant craving after historical omniscience? Why is it so hard to convince people that history, if it is to be put upon a scientific basis, must follow the path which has already been shown necessary to the advancement of all other scientific studies? History must have its general part. If you tell the average man that you wish to write a general history, he will regard you with an incredulous, if not pitying, smile. The complications appear to him immense, the subject-matter unwieldy in its mass. To write the history of England seems already to him a Herculean labour. It were better to limit yourself to the writing up of a few years of a Tudor reign. Already for so small a period you will find facts enough to keep you at work for a lifetime, if haply a single lifetime suffice. The average man, and in England more especially than elsewhere, has the specialist mind. All work beyond the limits of the most narrow and restricted specialism appears to him the most vague and unpractical, not to say *dilettante*, talk. As for a general part to history, it strikes him as mere haze. But general history is anything but vague. It is certainly no more vague than is general linguistics, and I think no one would venture to assert that the triumphs of linguistics, such as the laws of Grimm or Verner, are vague.

But the specialist has not grasped the one broad feature of science in general, that, the greater the mass of individual phenomena, the more simple will be the causes controlling them. Imagine the attitude of the specialist towards the Universe. Let us suppose him to be a native of Bristol, interested in the local history of that city. The causes which have contributed to the city's rise, prosperity, and decline are no doubt very numerous. Their investigation monopolizes the time of the local specialists. How much more numerous and complicated, he will think, must be the controlling forces of the history of England, which contains many cities like Bristol! The causes of universal history must increase in geometrical progression. Happily the fact of Newton's cosmic formula comes to our help and proves that the specialist is wrong in his supposition of an increasing number of causes of increasingly complicated and vast phenomena. The specialist is beginning history at the wrong end. The time has not yet come for writing a history of Bristol, or of Bath; it has not come for writing the history of England. We may begin now to write the history of Europe, and when we have accomplished this we can proceed to develop the particular history of Europe in its component countries. If we begin by specializing, by contracting historical myopia from a continued contemplation of some minute detail, we are lost. It is only in the most grandiose and general movements of history that we can hope to establish any sound correlations between facts. We can endeavour to solve such a question as why did the Greeks invariably graft all their political institutions on the idea of a πόλις, or one small, highly individualized city State. Why did they never form territorial States?

Principles and Details.

Our ability to solve questions of this genus does not at all imply that we are necessarily acquainted with all the myriad details underlying them; though unfortunately this is generally the common notion. There is an interesting parallelism in the case of the late Prof. Max Müller. His philological labours you are all well acquainted with, and you know how in support of philological laws he often quoted words and even phrases from almost every imaginable Indo-European tongue: it was this feature which contributed with unreasoning people to his immense prestige, for they imagined him to have a fluent knowledge of all the languages he appealed to for evidence. He was inundated with letters and documents for translation out of and into every tongue from London to Vladivostok, and when these communications were returned with regrets the senders were exceedingly chagrined, and some undoubtedly considered themselves the victims of an imposition. This is precisely the attitude of mind in which the general historian is welcomed. You may know many languages, and know no linguistics. You may know many agglomerations of historical facts, but be entirely ignorant of general history. What I claim, then, for history is its right to receive an *allgemeiner Theil* without which it can make no progress. Such a general part you will see, I hope at all events, by means of the comparisons I have drawn, to be highly technical and by no means vague. You cannot fail to have seen how little the minute study of isolated historical facts has really advanced us. The documents of the French Revolution, for instance, have been subjected to the most scrutinizing study. Masses of letters, reports, and papers of all descriptions have been edited and published until they fill whole libraries. Histories of the French Revolution fall from the press in an unending stream: all the new evidence is turned to account; an interesting and picturesque detail is added now and then; yet all these side-lights and front-lights, head-lights and rear-lights, sub-lights and super-lights have as yet only succeeded in making the darkness surrounding that great event more painfully visible. As far as real knowledge, the knowledge of the "why," is con-

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cerned, we are no further advanced. The old explanations will not fit. "It was the misery of the people" is too vague: the misery had been far more acute many times before, but had led to revolts, not to a revolution. The microscopic method of history-writing has broken down. It has so far ended only in skilful, talented, picturesque, but unenlightening *précis*-writing, and in nothing else.

General History in Secondary Schools.

But to come to the second half of my lecture. Why should the teaching of general history be introduced into the secondary schools? Because, first, it is a principle of pedagogy now almost commonplace that the evolution of the individual mind goes upon parallel lines with that of humanity in general. Now, since we have demonstrated that all sciences have only then been put upon a solid basis when they have first been given a general part, so the individual mind will never reach solid knowledge unless it proceeds in a similar way.

Effects of Premature Specialization.

It is impossible to estimate at anything like their proper value the disastrous effects produced in this country by an all too early specialization. The boy, after a few years' preliminary study at school, probably in most instances already restricted, with a view to the special subject which he is subsequently to take up, sees his various studies docked one after another, until at the age of fourteen, or very shortly after, he is already a confirmed and incurable specialist; for it is very soon after this age that he will come in a public school to the momentous dividing of the ways. He must choose his road and abide by the result. He will go on to the classical side, or the modern side, or the scientific side, or even the history side, though this latter, alas! is in more than one school an excuse for politely shelving a boy who has developed no pronounced abilities or inclinations. It is quite true that in several instances the magnanimous parents allow their dear son the benefit of the free choice of what line he will take up. But what a choice it is! It would be very much like the doctor who placed a row of physic-bottles before his patient and told him to select the mixtures which should suit his case. But more often there is no free choice. The matter is indifferent as regards the result. The boy with the natural party spirit of his age has but scant respect for the sides of the school which he has not graced with his person. The further he proceeds along the path of his speciality the narrower becomes his mental horizon. If he knows the titles of the branches of study which he does not pursue, he is an exception to the general rule. As for having the faintest idea of the subject-matter of those branches, it is quite out of the question. His mind soon loses that elasticity which is so precious a quality of the young mind, but which, of course, if constantly suppressed, must become atrophied. He gets accustomed to thinking in the most limited of spheres. He will probably develop only one attitude of mind, be only able to handle questions in one way, and to all subjects with which he may in after life have to deal he will apply that method—as a rule, a very inappropriate method. But what is most fatal is that he has lost all sense of proportion. He has no notion of the relative importance of things. Suppose him to be a student of classical literature, he will have no definite idea as to the relative importance of classical literature to literature in general. Admitting that he is an exceptionally bright boy, and that by some chance or by his singular energy has acquired a taste for letters in general, he will still have little idea of the relative position of letters to art as a whole. He stands, as it were, upon the extreme verge of human knowledge, and his own education, like a rush-light, has permitted him to see only a few paces from himself: beyond he sees impenetrable fog, in which lie hidden all the rest of history, art, and science. What can he know of all this? He cannot tell whether human knowledge ends abruptly a few steps from him or whether it extends into infinity.

This lack of proportion must inevitably put him out of sympathy with the majority of his fellow-beings—that is, it must injure him socially. With such whose sphere of knowledge is not his own he can have intellectually but little sympathy. Their interests are so absolutely foreign to his that he cannot enter into them or appreciate them, even as a sympathetic layman or outsider. If those he meets, as is most likely, have gone through the same curriculum with himself, they will have so much the same stereotyped kind of ideas that the contact of their minds will have little in it that is stimulating. We need not, then, be surprised that the friendships which he forms are somewhat taciturn—that his club is a place of hushed meditation—I would not say of gloom—rather than a bartering place of thought and novel ideas.

The pity of it all is that the system misses its mark. If it is not conducive to social *camaraderie* we might be consoled for this drawback by its immense practical utility. If the system made us get on, we might reconcile ourselves to paying the price at which that progress is purchased. All ideals have their penalties: the realization of even a minor ideal costs a pretty penny; so that we need not feel aggrieved if we have to pay for intellectual and practical progress. But surely it is a bitter thing to pay a very long price and not to secure our own half of the bargain. Unhappily, this is what happens. Intellectual progress has never been the work of specialists. The great scientific pioneers and the great discoverers have invariably been the most broad-minded of men, the most comprehensive of men; they have been ("sit venia verbo") generalists. I need hardly give illustrations. Perhaps you may remember that the discovery of the fertilization of orchids was due not to a specializing botanist, but to Darwin. The scientific basis of antiseptic, and hence aseptic, medicine was the work not of a doctor, but of a man primarily a chemist—M. Pasteur.

But, perhaps, I am being misconstrued. I do not mean that a man is to fritter away his time in trying to acquire universal knowledge. No one would impute to me, I hope, such an absurd thought. What I mean is that it is our business in youth, when the mind is so marvellously receptive, to get a *conspectus* of knowledge, to derive a sort of plastic idea of what man knows, to fix our intellectual bearings, so that we may, at all events, locate our own position. Every man cannot, of course, become a chemist or a physicist; but it is every man's duty to have a very definite notion of what chemistry and physics are.

Personal Experiences.

At the risk of being personal I must here for a moment diverge. There are things which I want to say, but which I do not want to assert as mere airy statements without any solid foundation. They are statements based, I beg to tell you, upon long, solid, and I think I may say not jaundiced, observation. My opportunities of observation have been exceptional. In the course of the last ten years I have been brought constantly into contact with specimens of what is generally considered the Englishman at his best. They are mostly young men fresh from two or three years at Oxford or Cambridge. With them, as lecturer, I have come into hourly contact; many have lived under my roof for months at a time, and I have been able to watch their development. I may safely put their number at at least fifteen hundred—all typical examples of first-class English educational training, public-school and University.

Prophylaxis against Isms.

It is seldom that we can pass through many years of life, certainly not after twenty, without running into collision with some unhappy victim of an ism—socialism, spiritualism, anarchism, or some other oddity or crank. Unlike the diseased man, the intellectual invalid is no friend of isolation. His one desire is to infect others. Owing to the glibness and persuasiveness given him by his malady he is a very dangerous centre of contagion. Humanity will not allow us to do away with him; so that our only safeguard is in prophylactic measures. We must make the general population immune. There is one sovereign serum against such eccentrities as spiritualism, materialism, &c.: we must inoculate our children with a sense of proportion. The narrower we make their minds, the more prone they will be to run off at a tangent into some kind of oddity or craze. How many a young man's head have I seen turned by a wave of atheism, or vegetarianism, or shall I say even palmistry! Now palmistry may be the most estimable of institutions; but it is hardly the kind of thing we should expect an average educated man to go mad over. A little sense of proportion would allow him to put all these "isms" in their proper places; he would see that the majority of them are very old ideas, furbished up again to look new, that they have long ago been threshed out, and that what little true grain they contain has received its full share of recognition.

The Sense of Proportion.

Now, I beg to state in (if you permit me to say so) uncompromising fashion that a study of the outlines of general history, political, intellectual, and institutional, will do more than anything else to correct this vitiated sense of proportion.

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Politically it will certainly do much; for it is in political views that the sense of disproportion is most grossly exaggerated. A country's strength must be based not only upon a true knowledge of its strength, but also upon a consciousness of its weak points. No nation is wholly strong. But this knowledge cannot be had without some standard of comparison. I do not think that I mistake the case when I say that the average Englishman's idea of Europe is England set in a ring of Montenegroes. France has a little importance; perhaps Germany, too, has a very slight significance; but, as to such countries as Italy, Spain, Austria, or Hungary being of any weight—why, the notion would seem to him too absurd. It is highly improbable that he has any adequate idea of Italy. Now, general history will give him, in clear and definite outlines, the lines of development along which have proceeded European intellect, European art, European politics, and European commerce. Certainly, the institutional, artistic, and intellectual part, the German *Kulturgeschichte*, must not be passed over.

Geo-Politics and Psychology as Bases.

This study of general history should be based upon geo-politics and psychology. I will speak briefly later on of my notions of history as a scientific study; but here I may say that, merely from a pedagogical point of view, I believe this to be the correct method. When the boy is shown the connexion between geography and history, and personality and history, it arouses in him that sense of human interest which is the most powerful incentive the young mind can have to learn, and the most ready means of indelibly impressing knowledge. General history offers one more pre-eminent advantage as a study: it can be begun at a very early age. To go into rather more detail, I think that already between twelve and fourteen the boy might begin, and that in two or three years he might easily get through a preliminary course which would firmly fix in his head a frame-work of historical categories. Subsequently he might fill out this frame-work by a more detailed course. I should suggest a double set of text-books, one short and brief for the learner, the other with a full pedagogical apparatus for the teacher. In the teacher's text-book would be found an abundance of illustrative matter, examples, and maps, with which to fill out the learner's outline. But this, of course, is a matter which would be advanced by discussion.

Ethical Considerations.

In putting forward the plea that history should be taught on the lines of geo-politics and psychology, I have not acted out of mere motives of utilitarian expediency. The young mind will no doubt more readily and permanently absorb the facts put before it if it is taught to look for the guiding thread of geography or psychology which holds those facts together. But in this system of history there is more than an artifice of pedagogy. I would not wish for a moment to underrate the value of high moral and high ethical ideals, especially in the contingencies of private and individual life. In the making of history, international history, they have, however, had little place. Humanity *en masse* has, as a rule, been impelled by less noble, if more traceable, motives: humanity *en masse*, when it has been driven to fight and driven to self-sacrifice, has had some very tangible, some very concrete, object in view. History, being subsequently written up by the estimable individual historian, has been made to parade in an ill-fitting moral cloak; but, unfortunately, the moral explanation of history almost invariably breaks down under even a moderate weight of criticism.

The Constant and the Variable.

Neither is man so iniquitous; it must be confessed that the career of nations, the objects for which they struggle, and the tendencies which they exhibit, have, as a rule, been imposed upon them, as it were, in spite of themselves. Their needs and their ambitions have been forged in Nature's workshop, and they must, and do, pursue these ready-made needs and ambitions, or perish. The great constant underlying all historical phenomena is supplied by Nature, by mother earth, in the form of physiographic or geographical conditions. To borrow the term of analytical geometry, we conceive geography to supply us with what we may call the *abscissæ* of history. Geography is, then, not all that we require, in order to trace the historical curve: it supplies it with one element—whence are we to take our *ordinatæ*? These, I think, we are to find in human psychology. Psychology forms the variable—*i.e.*, personal—element, the action of which we must trace with regard to a fixed geographical constant, first to be determined.

In summing up, we may say, then, that general history is the only study by which we think the bearings of the young mind can be fixed with regard to most of the great problems by which later in life it will be encountered; and that this study should be based on the two elements—first, of Nature, in the form of geography; and, secondly, the action of the human mind or heart (psychology), which will give the subject the greatest amount of human interest.*

Mr. Butler said the lecturer had raised his subject to a high plane, and dealt with it in the upper regions; but they as teachers had to apply the principles enunciated in somewhat lower regions. In dealing with young minds they could not quite follow the scientific lines suggested, and they had to consider exactly how these principles could be applied in the class-room. He agreed that it was desirable that a course of general history should be taken in all secondary schools, and also that the pupils should begin that course at an early age. The aim of the teaching should be to give to pupils a general idea of the course of events, and this could not be achieved without first laying stress on certain facts. The way in which these facts were presented to the pupil would depend upon the skill of the teacher; but no generalization would be possible without in the first place paying attention to the facts. The chief obstacle to the introduction into secondary schools of such a course was the lack of a suitable text-book, as very few teachers were capable of dealing with the subject from their own general knowledge. In the text-books now in use the most important events in the history of the human race were often dismissed in a few lines, while less important events were fully dealt with: this fault was repeated in the teaching with the result that the sense of proportion, on which the lecturer had laid so much stress, was altogether destroyed.

Mr H. L. Orchard fully endorsed the views expressed by the lecturer: the keynote of the paper seemed to him to be the inculcation of a sense of proportion, and in this he heartily concurred. As for the general study preceding the study of the particular, he thought that this method was now above criticism, especially inasmuch as the particular is almost invariably found to be a particular application of the general. The method, as a teaching method, was to be valued for three reasons: because a general study points out the correlation and interconnexion of things; because children analyze before they synthetize; and because the knowledge of the general immensely facilitates the study of the particular.

The Chairman remarked that the ideas expressed by the lecturer had been dealt with by Auguste Comte, and been successfully adopted by Prof. Beesly in dealing with Roman history, and his lectures afforded a far better general idea than could be obtained from those books which went more fully into detail. In teaching general history care must be taken to present the broad facts in such a way as to be comprehended by young minds, and teachers should guard against the danger of allowing the children to over-estimate the amount of the knowledge they have obtained.

Dr. Reich having replied to the remarks of the various speakers, a vote of thanks to the lecturer concluded the proceedings.

ADAM MARTINDALE.

A COUNTRY SCHOOLMASTER OF THE COMMONWEALTH TIMES.

By Prof. Foster Watson, University College, Aberystwyth.

(*Continued from page* 151.)

II.—Adam as Teacher and Preacher.

Adam's first teaching appointment was in the family of a Mr. Sherington at Eccles. He was engaged to teach the child and read prayers. He was, however, soon required to do menial work. His master was "high and tyrannical in his carriage." He required Adam to do extra work which was impossible because of the large amount already entrusted to him. When Adam protested, his employer quoted texts from the Scriptures (especially Titus ii. 9 and Job xxi. 13) against servants answering their masters. The sons followed their father's example, till their tutor made up his mind he would as lief lead bears as take charge of them.

He then became schoolmaster at Holland, in the parish of Wigan. He complains that in the days of constant alarms (the great Civil War) parents were afraid to send their children to school. He removed to Rainford in a few months, expecting to receive the same rates as his predecessor, and expecting, "as was customary," that parents would find him his diet by turns. The latter part of the agreement was not kept, and Adam became dependent on his father. At Rainford he wrote a book of arith-

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*The views contained in this lecture will be found developed at length in the Introduction to the lecturer's "General History" (Macmillan & Co.), now going through the press, in which are embodied the results of his life work.

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metic after the method of Record, Hill, and Baker. He attempted to shorten their methods, and added an original appendix on the extraction of the roots of fractions. He confesses that he knew nothing of decimals, logarithms, or algebra. The MS. was lost. Martindale next became clerk to a foot regiment, and attempted to carry on his studies, for which he had time.

He got away from this "hated life" amongst soldiers in 1644, and was appointed to the Free School at Over-Whitley in Cheshire. He tells us he had his name written over the door of the school, had a full school and a pretty store of rich men's sons. Moreover, he added to his income by "making writings" for his neighbours. He now set himself to profit his scholars and to improve himself. "I had some near fit for entering into Greek, and I thought it wisdom, having got the start so much of them, to keep myself so far before as none should tread upon my heels." Accordingly he started to study Isocrates, Hesiod, Musæus, Theognis, when the overwhelming suggestion was made to him that there was a great want of ministers of religion, and that he ought to fit himself for the work. It was a "thing so far above" him; but he was won over, and set to work on Hebrew and Keckerman. He then heard of a book called "Horologium," pretending to a method confirmed by experience, wherein boys may be well grounded in the Hebrew Grammar in twenty-four hours; but he adds: "I limited not myself to twenty-four days." In his study of logic he found endless trains of sub-divisions in his text-book. He wanted another book. But whose? Aristotle "was not for the teeth of such a novice as I was." He reads Ramus, Smith, Brerewood, Dr. Sanderson, Hereboord, and Derodon. Lastly, he rejoiced when he found the treatise of Burgersdicius. He studied ethics in Eustachius, and for physics he liked Bartholinus, and Comenius "best of all." In metaphysics he fed on Eustachius, Bartholinus, Crakanthorpe. These rather confounded him; but he found help in Suarez. He soon became an acceptable minister, though he soon found that he would rather have remained at Whitley School. This was about 1645, and Martindale seems to have remained a minister till the Act of Uniformity in 1662. He was then ejected from the living of Rotherston (which was worth £50 a year). Justices of the peace were very severe in Cheshire against Nonconformists being allowed to be tutors in families. What was Martindale to do?

I thought of physic, he says, and was encouraged by an antiquated practitioner, promising me books and other assistance; but I considered the time would be long, practice uncertain, and, above all, that the lives of men were not to be jested with, and bethought me of a less dangerous study—viz., of some useful parts of the mathematics; and, though I was now almost forty years old, and knew little more than arithmetic in the vulgar way, and decimals in Jager's bungling method,* I fell close to the study of decimals in a more artificial manner, logarithms, algebra, and other arts, since by me professed, in which work I was encouraged and assisted by noble Lord Delamere.

Martindale was still keeping school; but the Conventicle Act made him throw it up, and with it the 20s. or 25s. a week on which he lived. He removed to Preston and commenced school again; then he became tutor in the family of Sir Charles Houghton, and afterwards in other families. Then he went to Manchester as a teacher of mathematics. The head master of the Free School sent to him for instruction in that subject some of his best boys. Still he had his difficulties.

One that was a teacher in the town, and some others that thought themselves fit for such work, that knew nothing of decimals, logarithms, or the new species way, contemned and assaulted me, sending me questions, which I quickly returned answered and propounded another to every one that had sent any to me, and then I had done with them. But I had much ado to keep in my scholars from revenging my quarrels too far; for when they, by skill in logarithms, could in an hour answer such a question as these professors could not solve in a month (as, for example, such as this: What is 51. 3qs. a day to continue 300 years worth in ready money at £6. 12s. 6d. per cent.?), it was next to impossible to keep my pragmatical youths from running down these old soakers with their Record's Arithmetic. As for old Richard Martinscroft, who had more true skill in him than they all, though he was a Papist, he never opposed nor contemned me, but was always civil to me and communicative.

Such was Adam Martindale's force of character that he continued preaching and ministerial work in defiance of the law; but joined with it the teaching of mathematics. He at one time acted as tutor in a family for which he was paid (what he calls his usual rate) 15s. a week, besides diet and horsemeat; but was allowed other employment which cleared 15s. more. Even before this time he had been trying to arrange a University career for his eldest son; but subscription to creeds stood in the way, though he had actually taken him to Cambridge. Martindale was a fond father, and many are the passages in which the stern puritanism is thrown aside before the melting heat of the father. His son was for a time usher at Merchant Taylors' School; but, by imprudence, lost his post and threw himself on his father's charge. A school was found for him first at Lymm and afterwards at Northwich, where his scholars "came well on," and "tablers [boarders] began to come to him," when the son's wife caught a fever. As Adam states it, his son "begged of God that he might die in her stead, and was taken at his word."

For the rest there is little to add. Martindale wrote a number of theological treatises. He also wrote "The Country-Survey Book; or Land Meter's Vade Mecum" and "A Token for Shipboys; or plain sailing made more plain and short than usual." They both bear inscriptions, to which he was so well entitled—the one "By Adam Martindale, a friend to mathematical learning"; the other "A lover of the mathematics."

* Canon Parkinson's note: "Robert Jager's 'Artificial Arithmetic in Decimals,' Lond., 1651, 8vo."

OPEN COURT.

Thay say . . .
Quhat say thay?—Lat thame say!

OXFORD AND CAMBRIDGE.

A Royal Commission suggested.

By the Rev. H. W. P. Stevens, LL.D., Vicar of Tadlow.

Cambridge has lately been honoured by a visit from the King and Queen. One direct outcome of their presence amid the Masters, Professors, and Fellows is a strong desire to set forth the many unsatisfied wants of the University. But any such movement tends to bring shortcomings into evidence. One and a half millions, it is stated, could be used in furthering much needed as well as much varied University work. A little addition and division of corporate endowments published in the *Reporter* show how a tiny band of undergraduates may be the appanage of a Master and a certain number of Fellows. Unhurried opinions are uttered by those who know the inwardness of the working of the different "societies," as well as by those who are brought into touch with the ideals nourished by the men educated under the wings of these corporations. It is found that when these ideals are exposed to the unsentimental work-a-day light of practical life they seem to be lacking in many things which make for the resourceful self-trusting citizen.

By the recent two Education Acts persons recognized as experts are to be incorporated on Educational Boards. This idea needs development. It suggests a kind of supreme Consultative Board for the two older Universities: in part elected, in part co-opted, in part nominated. The special work of this body would be of the highest importance. Arrangements could be initiated for new professorships, anticipating, for example, the private munificence of a Prof. Skeat and a Prof. Stanton. Here might be the guiding authority of subjects, as well as of dates for entrance scholarships. What is learned to work well in other Universities might have a fair trial with us. We find, for example, that abroad the specialist does not inevitably begin his career as a teacher immediately on taking his degree. At each University (as a rule) in Germany and France there is to be found some recognized intellectual leader drawing a cosmopolitan class. The students are drawn by the professor, not by the University.

It is an interesting comment on this that a late number of the *Granta* strongly objects to undergraduates being called students. To bring knowledge to the learner, and to induce inspiration of teaching, there might be an interchange between the Universities by the professors of their spheres of influence. *Mutatis mutandis*, the Unions find this plan useful; and learning, not examinations, is the *raison d'être* of a University.

As to business matters, much could be saved by co-operation. All the corporate estates might be under the control of a body somewhat akin to the Ecclesiastical Commissioners. A smaller arrangement would be, one system of mutual insurance. In many cases returns of income-tax can be claimed with success. Movements which are the outgrowth of a somewhat luxurious standard

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of living need watching. The amounts spent on dances (in some cases over £600 for a single dance) by the men, and on dinners and teas to the men by the tutors, cause a feeling of wonderment to the intelligent outsider. It is a national instinct that social institutions should be allowed to develop themselves. A healthy development is helped by timely skilled guidance. That can come only from trained experience.

THE TEACHERS' REGISTER.

Amended Regulations.

The Teachers' Registration Regulations have been issued (1d.) as revised up to March 1, 1904. The following alterations were made by an Order of the Board, dated February 2, 1904:—

(1) An addition in Section 3 (1) and in Section 4 (1), here italicized:

(1) He must have obtained a degree conferred by some University of the United Kingdom, *or have obtained a recognized degree conferred by some other approved University*, or . . . .

(2) The addition of two alternative subsections in Section 3 (2):

or (iii.) have passed an approved examination in the theory and practice of teaching, and have spent at least five years as a student-teacher under supervision at a recognized school (not being an elementary school), where the head master has entered into an approved agreement with him for his proper training as a student-teacher; or (iv.) have passed an approved examination in the theory of teaching, and have, with the sanction of the Board, undergone training at one of the Universities or training colleges mentioned in Appendix D to these Regulations or some other recognized institution for the training of secondary teachers, and served as a student-teacher under supervision at a recognized school (not being an elementary school) for periods which amount in the aggregate to not less than one year, and have produced evidence of ability to teach.

(3) An addition (italicized) in Section 3 (3):

He must, *unless he has spent at least five years as a student-teacher under Subsection iii.*, have spent . . . .

(4) An addition to the interpretation Section (15):

A "student-teacher" means a student in training for the teaching profession, who does not count as part of the school staff, and in respect of whom a fee is paid or some other definite provision for the expense of training is made, and in respect of whom approved provision is made for (*a*) adequate opportunity for the study, under supervision, of the theory of education, including the principles of teaching, discipline, and school management; (*b*) sufficient practice, under supervision, in the actual work of managing school classes and in the application of theory to practice. Provided that a student-teacher in a school recognized for the purpose of Regulation 3 (2) (iii), may receive a salary and count as part of the school staff.

(5) Addition to Appendix D: Institutions, &c., for the Training of Secondary Teachers. (The star indicates "added by the Board of Education"):

Cherwell Hall, Oxford.* St. Mary's Hall, Stonyhurst,* provided that one year's practical training be given at one of the following schools:—(1) Stonyhurst College, Blackburn; (2) Mount St. Mary's College, Chesterfield; (3) Beaumont College, Old Windsor; (4) St. Francis Xavier's College, Liverpool; (5) St. Ignatius College, Stamford Hill; (6) Wimbledon College; (7) The Catholic College, Preston; (8) St. Aloysius' College, Glasgow; (9) St. Ignatius College, Malta. Clapham High School, Secondary Training Department.* London Day Training College, Secondary Department.* The Incorporated Froebel Educational Institute.*

(6) A further addition to Appendix D:

List of Schools Recognized for the purposes of Regulation 3 (2) (ii).

Croydon: High School, Wellesley Road. Exeter: The High School (Maynard's Foundation). London: High School, Wemyss Road, Blackheath, S.E.; High School, Norland Square, Notting Hill, W.; High School, West Hill, Sydenham, S.E.; North London Collegiate School for Girls, St. Pancras. Manchester: High School for Girls, Dover Street. Oxford: High School, Banbury Road. Sheffield: High School, Rutland Park, Clarkehouse Road. Sutton: High School, Cheam Road. Wimbledon: High School, Mansel Road. Winchester: The High School. Windsor: St. Stephen's College, Clewer St. Stephen. Winscombe: Sidcot School. York: Bootham School; The Mount School (Girls).

[See also under "Fixtures," and under "Literary Items."]

COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A meeting of the Council was held at the College, Bloomsbury Square, on March 19. Present: Dr. Wormell, Vice-President, in the Chair; Mr. Butler, Prof. Adams, Mr. Armitage Smith, Rev. J. O. Bevan, Mr. Bidlake, Rev. J. B. Blomfield, Rev. A. W. Boulden, Mr. Bowen, Mr. Charles, Mr. Eve, Miss Jebb, Mr. Kelland, Rev. G. E. Mackie, Mr. Millar Inglis, Mr. Pinches, Miss Punnett, Mr. Rushbrooke, Dr. R. P. Scott, Rev. J. Stewart, Mr. Storr, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the Professional Preliminary Examination was held on March 1–3, and had been attended by 344 candidates.

He reported that an Examination for Certificates of Ability to Teach was held on the 25th to 27th February, and was attended by 12 candidates.

He reported the steps that had been taken to bring the views of the Council on the question of school-leaving certificates before the Consultative Committee.

In response to a communication received from the Teachers' Registration Council, it was resolved that the College would undertake to act as one of the bodies who would be willing to ascertain and report on the ability to teach of applicants for registration under Reg. 5 (2) b.

The Report of the Examination Committee was adopted, and syllabuses of the requirements in science subjects—Botany, Animal Physiology, Zoology, Geology, Physics, and Chemistry—for the three grades of the Diploma Examinations were approved.

It was resolved that a resolution should be submitted, in the name of the Council, to the next General Meeting to alter clause 1 of Section 1 of the By-Laws, so as to include among those qualified for admission to membership of the College persons whose names are included in Column B of the Teachers' Register.

The following persons were elected members of the College:—

Miss H. M. Barnes, L.C.P., Grammar School for Girls, Worcester.
Mr. H. I. Judson, 8 Huntingdon Road, East Finchley, N.

The following books had been presented to the Library since the last meeting of the Council:—

By the Bureau of Education, Washington.—Report of the Commissioner of Education for the Year 1902, Vol. II.
By Edward Arnold.—Symes's Story of the East Country.
By G. Bell & Sons.—Bell's French Course, Part II.; Yates's Lucian's Vera Historia.
By A. & C. Black.—John's Macaulay's Lives of Goldsmith and Johnson.
By C. J. Clay & Sons.—Goodwin's Demosthenes on the Crown; Shuckburgh's Sophocles' Oedipus Coloneus; Payen-Payne's Gautier's Voyage en Italie; Verity's Shakespeare's Hamlet; Woodward's English Poetry for the Young, Parts I. and II.
By W. B. Clive.—Norwood and Watt's Tacitus' Agricola.
By Methuen & Co.—French and Boardman's Practical Chemistry, Part II.
By Relfe Brothers.—Haynes's Geography of Great Britain and Ireland; Morgan's Algebra for Junior Forms.
Calendar of University College, London.

COLLEGE OF PRECEPTORS.

PROFESSIONAL PRELIMINARY EXAMINATION—CLASS LIST.

March, 1904.

The Supplementary Examination by the College of Preceptors for Certificates recognized by the General Medical Council, the Law Society, the Royal College of Veterinary Surgeons, the Pharmaceutical Society of Great Britain, the Board of Education, and other bodies was held on the 1st, 2nd, and 3rd of March, in London, and at seven other local centres, viz., Birmingham, Bristol, Cardiff, Fraserburgh, Leeds, Liverpool, and Manchester. The following candidates obtained Certificates:—

First Class [or Senior].

Pass Division.

Beresford, G. W. *ch.*
Brown, I. S. *h.g.f.*
Child, D. E. *e.f.*
Ground, F. W.
Kettle, R.

Second Class [or Junior].

Honours Division.

Alabaster, S. H. *f.ma.*
Asplen, W. R. W. *l.*
Banks, C. *a.al.*
Hale, C. C. *a.al.m.*
Hobbs, G. V. *a.al.*
Hudleston, J. R. *al.*
Jones, W. B. G.
Langton, P. S. B. *e.*
Morgan, F. C. *a.al.*
Peddar, G. M. *a.f.ge.*
Plenderleith, E. J. *a.*
Salter, T. H. *g.a.*
Wren, J.

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Pass Division.

Amies, N. G. R.
Armstrong, H. S.
Ayling, A. C.
Barlow, A. M.
Bennett, G. R.
Bennett, R. H.
Bennett, R. S. de C.
Bennett, W.
Berry, N. W. *f.*
Bowes, T. D.
Bradnam, C. H.
Brandon, G. N. *a.*
Brown, B. J.
Brown, H. D.
Browne, E. M.
Bull, F. B.
Burgess, E. F.
Burton, P. J. *a.*
Clapperton, J. H.
Cobb, I. G.
Cock, T.
Comissiong, W. C.
Dale-James, K. S.
Danziger, S.
Daunt, E. W. F. T.
Davies, H. A.
Davis, J. H. C. *a.*
Dawson-Smith, C. F.
Dence, M. C.
Dewsbury, H.
Donaldson, P. M. *e.f.*
Dias, A.
Dvorkovitz, P.
Edwards, A. G.
el Arculli, H.
Ellis, G. E. D. *al.*
Evans, H. A. *a.*
Faulkner, C. D.
Finlaison, H. E. B.
Frame, W.
Fripp, J. T.
Fyffe, A. A.
Gideon, C. S.
Grant, H. D.
Greatorex, R. W.
Griffiths, G.H.C.St.G.
Gutteridge, B. G.
Haddon, A. W. *ch.*
Haddon-Smith, H. B. *al.*
Hall, A. B. *a.*
Harrison, N. H. *a.*
Havard, D.
Herbert, A. H.
Hickman, G. H.
Higham, J. P.
Hill, E.
Howells, W. S.
Hughes, W. *a.*
Husey, H. E.
Jackson, A. C. *h.g.*
James, T. H.
Kemp, L. J.
Key, D. I.
Killard-Leavey, T.J. *a.*
Kinnear, J.
Knowles, C. H. *e.*
Lake, W. J. L.
Leach, T. H. de B.
Lilly, G. A. *ch.*
Lodge, B. H.
Longstaff, E. R.
Maden, W. H.
Marks, A. W. *f.*
Martin, P. S.
May, H. W. M. *a.*
McCully, D.
Morgan, A. W.
Morgan, J. F. H.
Morphett, W. H.
Mumby, G. C. R.
Nuttall, H. C. W.
Owens, J. H.
Perry, H.
Piper, W. J.
Pittard, R. A.
Potts, R. G.
Pritchard, E. F.
Rice, C. E.
Rolason, D.
Ruben, E.
Rutherford, A. P.
St. John, L.
Smeed, E.
Smith, F. L. *g.*
Smith, J. M.
Smitton, E. C.
Snow, F.
Somerset, V. E.
Spain, H. G.
Spill, A. E. V.
Stanley, E. G. *ge.*
Storer, E. J.
Stuart, J. A. W. *a.al.*
Tarn, F. G. *ch.*
Thornton, H.
Towell, W. B.
Tozer, A. J.
Treherne, R. C. *ge.*
Turner, E. V. B.
Umpleby, L. L.
Vicary, W. P. *l.*
Vine, S. B.
Waddington, C. G.
Wallis, S. L.
Watkins-Baker, L. C.
Watson, A.
Way, L. F. K.
Whittington, T. H.
Williams, C. G.
Williams, J. L. *a.*
Williams, J. W.

N.B.—The small italic letters denote that the candidate to whose name they are attached was distinguished in the following subjects respectively:—

a = Arithmetic.
al = Algebra.
ch = Chemistry.
e = English.
f = French.
g = Geography.
ge = German.
h = History.
l = Latin.
m = Mechanics.
ma = Magnetism and Electricity.

DIPLOMA EXAMINATION.—CHRISTMAS, 1903.

The following is a Pass List of Candidates examined at Colonial Centres:—

Theory and Practice of Education.

ASSOCIATESHIP.

Clemmans, Miss G.
Denton, J.

English History.

Schoonees, L. A.
Tanner, B.

Algebra.*

ASSOCIATESHIP.

Schoonees, L. A.

* Under old Regulations.

PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a List of the Successful Candidates at the Examination held in February, 1904:—

CLASS I.

Eggers, J. W. C.
Knight, A. E.
Morrison, A. E. H.
Slefrig, S.
Stalley, Miss G. E.

CLASS II.

Gavin, P.
Mayo, H. W.
Robinson, Miss M. K.
Urwick, Miss H. M.
Weeks, Miss E. M. A.
Young, S. J.

REVIEWS.

THE "ODYSSEY."

The Odyssey of Homer in English Verse. By Arthur S. Way, M.A. (6s. net. Macmillan.)

Mr. Way's translations of great classical works have justly been received with appreciative welcome, and none more so than his version of the "Odyssey." The present is the third edition. The delay in issuing it may be held to be recompensed by the fresh labour that the author has expended upon it. While not altering the essential features of the work, he has subjected the translation to a thorough revision, patiently carried out, and he has reduced the licence in rhyme, and given special attention to the technique of the rhythm. Practically, then, the version has now assumed its permanent form. When all is done, the poem is inevitably not Homer, but it will give the non-classical reader as good a notion of the "Odyssey" as he is ever likely to obtain till he has mastered the original; and in any case it is a fine poem, which ought to be in the hands of general readers as well as at the elbow of the student. There may be some initial difficulty in seizing the somewhat unfamiliar rhythm, but a little attention and practice will quickly surmount that. Take, for example, the delicate ophthalmic operation on the sleeping Cyclops (IX. 375, *ff.*):

Then, then did I thrust beneath a heap of embers the pole,
Till it glowed in the Fire-god's breath; and with brave words cheered the soul
Of each, that none might shirk his part in the desperate work.
But when the stake into flame would have burst in a little more,
Green wood as it was, and became of a fiery glow all o'er,
Then I snatched it out of the fire, and drew nigh, and my comrades stood
Around, and their courage rose higher, some god unto us being good.
Then, taking the stake, my men—right sharp was the fierce red tip!—
Plunged it into his eye: I held it above, and so
Whirled it around, as when one boreth the beam of a ship
With a drill, and his fellows ply the long strap to and fro,
As on either hand below him they stand, and it swiftly doth go.
Even so through his eye we crushed and we whirled the fire-tipped wood;
And around the hot stake gushed a fountain of hissing blood:
And singed by the fiery glow were eyelid and eyebrow around
The burning ball, and below at the roots was a crackling sound.
And as when in a smithy a man dippeth axe or adze he hath made
Loud hissing into a pan of water to temper the blade—
For of suchlike handicraft good shall the edge of the iron be found—
So, as we plunged in the wood, was the eyeball hissing around.
And he yelled, and the cavern rang in thunder to that wild roar;
And backward in terror we sprang, as with frantic hands he tore
The torturing stake from his eye, and dripping in crimson spray
We saw the blood-gouts fly, as he dashed it madly away.
And the man-beast's hideous yell pealed out through the startled night
To his fellows that round him dwell by windy ravine and height.

Though coloured here and there with deeper tints, the transcription is fairly close, and throughout spirited. More in keeping with the prevailing tone of the "Odyssey" is the eventual recognition of Odysseus by Penelope (XXIII. 104, *ff.*, 205, *ff.*):

But Penelopê passing wise made answer, and spake to her son:
"My child, mine heart in my breast is sorely amazed this day.
And I find no word to ask, and I know not what to say:
And I cannot, I cannot look in his face:—but, if of a truth
He is very Odysseus come back to his home, we twain, good sooth,
Full well shall be known of each other ere long; for tokens there be,
Yea, many a hidden sign, that we know, and none but we." . . .

O knees that as water are weak, O heart's shield suddenly broken!
Who save Odysseus could speak it—the spell of the secret token?
She stayed not, but weeping she sped to him; dear loving arms hath she flung
Round the neck of Odysseus, his head she kissed, and she cried as she clung:
"O lour not upon me, Odysseus—thou knowest—thou needs must know,
Who in all things art wisest of men!—but the gods have meted us woe,
Who begrudged that from life's sweet morn we twain, ever side by side,
Should pace to the threshold of eld, to a love-litten eventide.
O be not indignant for this, O let not thine anger be hot
That when first I beheld thee with such-like greeting I welcomed thee not!
For shuddered mine heart in my breast with a sickening fear alway
Lest a stranger should come, and with false words cozen and lead me astray.

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But now—forasmuch as thou tellest a token clear as the light— . . .
O husband, the hard heart yields to believe in this sweet hour!"
Then thrilled in his heart and his eyes a passion of crying yet more,
And, clasping his winsome-wise beloved, he wept full sore.
O sweet as the first far sight of the land unto them that swim,
Whose ship by the Sea-god's might on the wild sea storm-rack dim
Hath been split by the mad wind's roar and the shock of the surge down-crashing,
And but few have swum on to the shore through the wave-crests hoary-dashing,
With the salt from the leagues of sea overcrusting their bodies around,
And with rapture from bane they flee, and they tread on the blessed ground;
So joyed that wife to behold her beloved, with white arms flung
Round his neck, and she could not unfold them, but lovingly, lovingly clung.

Mr. Way is a poet as well as a translator. This beautiful rendering of the "Odyssey" enriches our literature, and will give permanent pleasure to thousands that are unable to enjoy the poem at first hand.

Educationists of Modern Europe.

Studies in the History of Educational Opinion from the Renaissance. By S. S. Laurie, A.M., LL.D., Professor of the Institutes and History of Education, University of Edinburgh. (6s. Cambridge University Press.)

Prof. Laurie sets aside the plan of presenting a general historical outline of opinion, having found it in practice to be "uninstructive as compared with an analytic exposition of the doctrines of eminent writers themselves"; but at the same time he indicates the leading characteristics of the historical development. This course probably secures a keener interest—at any rate for the particular writers brought into prominence—though the concatenation of progress is apt to be less sharply impressed. Prof. Laurie first sketches the "great and complex historical movement" of the Renaissance as a necessary preliminary to an intelligent comprehension of education as affected by it. This naturally leads him to compare the influence of the Renaissance on secondary schools at the time with the influences on them at the present time:

> The restoration of antiquity gave the chief direction to the work of the secondary schools for obvious reasons. It was only at school and in the University that a knowledge of the ancients could be obtained. Latin and Greek had to be laboriously acquired, whereas the active-minded student could read his Dante and Petrarch and all vernacular contributions to literature without the help of masters. This theory of secondary instruction soon prevailed over all Europe, and still governs the curriculum and aims of British secondary schools.

Well, not exactly; not even the prominence of Latin and Greek is maintained, while the vernacular and other subjects have edged themselves into most schools. But the fundamental question for us is the comparative importance of subjects, and the classics cannot be said to hold now the comparative importance that they held at the Renaissance. Prof. Laurie, indeed, is "personally disposed to think that there are no instruments that can compare with Latin and Greek literature if our purpose be culture." But our purpose, for good or for evil, has been widened, and even Prof. Laurie admits that culture comes off badly in "what we call 'classical' education." Fortunately, he at last puts his finger on the true question: "Can we think of no other scheme of education which will conserve the past while fitting for the living present? Can we find no modern definition of Humanism?" We do not find, however, that he furnishes an answer.

The chapters are all very well worth perusal. There is occasional incompleteness, no doubt, which Prof. Laurie sometimes naïvely explains by telling us that he has "not had time to study" this or that; but then he does not profess to give a complete history. He starts with Vittorino da Feltre, and the fullest treatment in the first period falls to Ascham and Montaigne. The modern period dates from 1600, commencing with Bacon, who "more than any other man is to be revered as the 'first of the Moderns'": truly enough, from the insular point of view, but hardly from the standpoint of the history of European thought. The other representatives for this period are Comenius, Milton, Locke, and Spencer. Incidentally we may note that Prof. Laurie is more considerate with Ratke than Prof. Adamson was the other day; for he says: "there was, perhaps, more of the light of originality in Ratke than in Comenius," and "there can be no doubt that Ratke anticipated him in all his general principles of method": indeed, "to him, and not to Vives or Andreä, Comenius was directly indebted" (page 149). There is much discriminating criticism in the notice of Milton's "Tractate." Locke is handled very fully: Prof. Laurie regards him as "the most important English writer on education next to Ascham," and is of opinion that "no writer on education surpasses him" (page 181); he is "the greatest of them all, in spite of his attitude to language and literature, and his encyclopædism," and, "notwithstanding his debt to Rabelais, and still more to Montaigne, his educational conceptions are in the truest sense his own" (page 234). The treatment of Spencer is strenuously adverse, Prof. Laurie's philosophical standpoint being so very different; but it is, perhaps, not essentially unfair. The volume is not so discursive as one would expect from the author; but still there are many incidental passages that come in unexpectedly to enliven rather than to impede or to confuse the narrative; and altogether it is piquantly written, and very interesting and suggestive.

Early Arabian Society.

Kinship and Marriage in Early Arabia. By the late W. Robertson Smith, Adams Professor of Arabic in the University of Cambridge. New Edition. Edited by Stanley A. Cook, M.A. (10s. 6d. Black.)

The first issue of this celebrated work, "from its freshness and originality, attracted the attention of Semitic scholars and anthropologists in 1885, and laid the foundation of all subsequent research in this department of studies." The present edition is enriched with notes and references collected by the author during the nine years that elapsed between the original publication and his death, and by Prof. Ignaz Goldziher, of Budapest, who had undertaken to see it through the press, but was unable to do so. Mr. Stanley A. Cook has done his part with discretion, alike scholarly and reverent. The references to Robertson Smith's complementary work, "The Religion of the Semites," are not the least useful of his contributions. Notwithstanding the great advance in the study of totemism, he has done well to let the author's chapter on it stand, with such additions and corrections as he indicated. It is, as Mr. Cook says, impossible to determine how far or in what directions Robertson Smith would have recast his views in the light of later investigations; and the same remark applies to all the recent developments of Babylonian discoveries. The sound procedure was to give the work its proper historical position as prepared by the author, and that is what Mr. Cook has efficiently done. We may recall the fact that Robertson Smith "wished to speak not only to general students of early society, but to all who are interested in old Arabia," that his results "have a very important bearing on the most fundamental problems of Arabian history and on the genesis of Islam itself," and that the sidelights on Hebrew practice are numerous and important. The publishers have done good service by presenting the work in a form as near as possible to the latest conceptions of the distinguished and lamented author.

A Distinctive Text-Book of Geometry.

A New Geometry for Schools. Part I. By S. Barnard, M.A., and J. M. Child, B.A. (Cantab.). (4s. 6d. Macmillan.)

In this work on elementary geometry we have probably one of the most important, and certainly one of the best, of the text-books whose production is to be traced directly to the movement for reform in the methods of teaching the subject. Part I. deals with the geometry of plane figures, and includes the substance of Euclid's first six books, together with many additional propositions, as well as a discussion of some of the specially useful elementary applications of algebra and trigonometry. The influence of the recommendations of the Mathematical Association Committee and also of the Cambridge Syndicate may be felt throughout. Divided as the work is into distinct sections, of which the first provides an informal consideration of fundamental principles, the second a practical course, whilst the third is devoted to the theory of geometry, its pages offer facilities for the selection of varied curricula suitable for students of different classes. The table of contents in itself gives a very valuable series of enunciations of problems and of theorems. The general excellence of the definitions, of the enunciations, and of the mass of the demonstrations both of problems and of theorems, will be admitted at once and universally; and, were it not for the importance of urging the pressing need for accuracy in every detail, whether with reference to logic or to language, the temptation would be to pass over (in review) the instances of failure in these respects. The noting of a few cases will be sufficient to draw the

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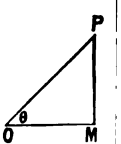
attention of the authors to the value of a close revision, and it is hoped that it will also influence future writers.

Consider first the construction for bisecting a given finite straight line as treated by this book in common with most others on practical geometry. The student is told to describe arcs with the extremities of the line as centres and "any radius greater than half the line." Now (1) he is not definitely instructed to use the *same* radius in each case; and (2) the method is liable to be criticized as essentially involving argument in a circle, since to place the point of bisection is the object of the construction. Of course, any author may contend that he meant "any the same radius greater than half the line by an excess which is unmistakable," but Euclid's method (or its equivalent) leaves no possible doubt and is therefore superior. Again, when bisecting a given circular arc AB the student is instructed to describe with A and B as centres, and *any* the same radius, arcs cutting at C; but *any* the same radius will not ensure cutting, and, seeing that the reader is at this stage able to bisect the chord AB, the necessary condition "greater than half the chord" should clearly be inserted. Still another instance in conclusion. It is undoubtedly true that the trigonometrical functions are defined for acute angles only; but why teach at all that PM/OP is the sine of the acute angle θ, only to have to explain that MP/OP, and *on no account* PM/OP, is to be called the sine of this same angle as soon as the consideration of angles not confined between the narrow limits of zero and $\frac{1}{2}\pi$ is undertaken?—Briefly, if reform is to be a true reform, it must guard against substituting new defects in place of the old ones which it is rightly anxious to eliminate.



CAMBRIDGE ENGLISH CLASSICS.

Thomas Hobbes: Leviathan; or the Matter, Forme, and Power of a Commonwealth, Ecclesiasticall and Civill. The Text, edited by A. R. Waller. (4s. 6d. net. Cambridge University Press.)

The idea of the new series of "Cambridge English Classics" is a fortunate inspiration, which promises great satisfaction to the reader and lover of English literature as well as to the scholar. The present volume is an excellent example of the purpose and principle of the series. It is a very important work, especially in point of matter, but also in point of literary execution; and it is faithfully reproduced in a very handy form, with good type, light paper, and agreeable get-up. The scrupulous fidelity of reprint from the last edition revised by the author or from the most authentic posthumous edition will give high value to the series in the eyes of students, especially in the case of works that are not very readily accessible, or that bear a high price. At present the works are not to be accompanied by notes other than purely textual and bibliographical. Some will require notes more urgently than others. It may be hoped that, in a future edition, something will be done to point out the essential importance of this great work of Hobbes, and to trace the influences that tended to mould its doctrines and that flowed from it. Hobbes tells us, indeed, that it was "occasioned by the disorders of the present time" (1651), but we are thinking especially of the history of the ideas, and particularly of the more important ones, those in Part II., on civil society—his unacknowledged debt to Jean Bodin on the one hand, and on the other the debt of the Analytical Jurists to him. Meantime, however, we gratefully acknowledge to Mr. Waller and the publishers the boon of an accurate and convenient text of a famous book at an exceedingly reasonable price.

GENERAL NOTICES.

CLASSICS.

The Poems of Gaius Valerius Catullus. With an English Translation by Francis Warre Cornish, M.A. (7s. 6d. net. Cambridge University Press.)

A handsome, not to say luxurious, volume, well befitting Catullus. Mr. Cornish gives text and translation on opposite pages. The text he has investigated independently, with results that come very close to Dr. Postgate's edition, from which he has "never departed without reluctance." The translation is in prose, carefully weighed and delicately fashioned on the original. It should make Catullus more familiar, for he is by no means easy without some such help; and a more trustworthy guide we do not know. Occasionally, as in the opening of Carmen xxxi., the English is not immediately plain without the Latin—an all but inevitable deception of the translator, unless he be rigidly checked by some one that is ignorant of the original, and reads the English quite independently. However, the work is very ably and very carefully done. The appended notes are brief, offering alternative renderings or textual remarks on obscure and difficult points.

MATHEMATICS.

Elementary and Intermediate Algebra. By J. Lightfoot, D.Sc., M.A. (4s. 6d. Ralph, Holland & Co..)

Dr. Lightfoot's "Algebra" is designed for junior University students, and takes into special consideration the work required for their preliminary and intermediate examinations. It presents some novelties in both method and arrangement, although in the main it follows the course of other good elementary text-books. The points exhibiting originality of method are all deserving of careful notice, even though the suggested changes are not all evident improvements. The alterations in respect of order are in every case made with a view to securing a more strictly logical sequence, so that the acquirement of a knowledge of the science may be at the same time a medium for mental discipline.

First Stage Practical Plane and Solid Geometry. By G. F. Burn, A.M.I.Mech.E. (2s. Clive.)

The volume owes its origin to the issue of the new Syllabus of the Board of Education, and is intended to meet the altered requirements of students taking the Elementary Stage in Practical Geometry. "Any special merits of the older course have, however, not been disregarded." A number of useful references and explanatory notes are introduced, and the little book is fully illustrated by clearly reproduced diagrams.

ENGLISH READERS.

Messrs. Cassell start a series of "Pictorial Reading Books" with *Æsop's Fables* and the story of *The Swiss Family Robinson* in words of one syllable (6d. each). Each little book has four coloured illustrations, and the former has also a number of pictures in black and white.—Messrs. Cassell also publish as a "new supplementary reader" *The Greek Heroes* (6d.), five ever attractive stories translated from Niebuhr, with additions. All the three books make good reading at home as well as in school; and they are nicely got up.

Macmillan's Story Readers, Books I. and II. (10d. and 1s.), by Evelyn Sharp, offer simple lessons on familiar matters, and provide good reading collateral with the more formal books.

"Pitman's King Edward History Readers" have developed a fresh branch, "The Preparatory Readers." Book I. (10d.), *Stories from Early English History* (B.C. 55 to A.D. 1485), written by Mrs. Hancock, member of the Sunderland Education Committee, is simple and interesting. *The Story of our own Times* (from 1837) is fully representative in subjects. Both books are lavishly illustrated.

Hertfordshire: "a reading-book of the county," by H. R. Wilton Hall (1s., Blackie), aims "to connect the geography and history of the county with the geography and history of the country." The idea is a good one, and it is very successfully carried out. The illustrations are numerous and good.

Two or three series of "Country" Readers published by Messrs. Macmillan deserve particular attention. Of the *Junior Country Readers*, by H. B. M. Buchanan, B.A., and R. R. C. Gregory, Volume I. (1s., for Standard I.) tells a number of "True Animal Stories," with lists "of words to learn," and "transcription exercises"; and Volume III. (1s. 4d., for Standard III.) consists of "Talks on Country Life," expressed in simple language and conveying much information about "some of the domestic and wild animals of an English farm, which can only be obtained by personal experience and observation." Then *A Country Reader*, II. (1s. 6d.), by Mr. Buchanan, is concerned with the goat, the donkey, the cat, our common reptiles, fish of our ponds and streams, pastures and grasses—in more advanced form. Again, *Senior Country Reader*, III. (2s.), by Mr. Buchanan, deals with manures, crops of various kinds, cottage gardens, pigs and poultry, hares and rabbits, pigeons, and the management of a grass holding—all in a thoroughly practical fashion. Finally, *Lessons on Country Life* (2s. 6d.), by Messrs. Buchanan and Gregory, constitutes "a guide to the study of the animals of the farm, their habits, uses, and treatment, together with notes on the wild animals, wild birds, and injurious insects common to our woods and fields." There are eighty lessons. From these volumes children may learn not only reading, but also a vast amount of country information of a useful character, and the beginnings of a habit of observation and inquiry. The books are well written in view of the varying ages of the pupils, and they are fully and admirably illustrated.

ENGLISH COMPOSITION.

Essay-Writing for Schools. By L. Cope Cornford. (4s. 6d. Murray.)

Mr. Cope Cornford explains by a sub-title that his book is "a practical exposition of the principles of this form of composition, illustrated by models and examples drawn from the English classics, and designed to meet the requirements of the public examinations." Necessarily it is based on the wide presupposition of the elements of composition, though there is added a large appendix illustrating and

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briefly discussing one set of these elements—"common errors in the use of words and their inflexions" (much of which is usefully borrowed from Dr. W. B. Hodgson's excellent work "Errors in the use of English"). Mr. Cope Cornford properly insists on practice, and he lays down his explanations and suggestions for the business of composing an essay with a directness, clearness, and firmness that will appeal strongly to the mind of the student. The examples are mainly descriptive and narrative passages, or mixed literary pieces. Without laying undue stress on formal rules for any mode of composition, we cannot but think that a more systematic and more complete exemplification of aspects of the modes—at any rate, of description and narration—would have been more efficient. At the same time, the treatment, so far as it goes, is fresh and businesslike, and neither teacher nor student can fail to profit by it and by its example. Some of the "common errors" may be questioned. "The starting *of* the machine" is certainly not a "mistake," and there is no good reason for omitting the "of." "The preposition placed at the end of the sentence is both ugly and incorrect"—sometimes; but the usage is idiomatic, and often avoids a worse result. "This is not the book he referred *to*" is much preferable to the use of a lumbering "which" ("to which he referred")—a form that nobody but a conscious grammarian would ever dream of employing. "Who is there?—*Me*": Who on earth but a grammarian would answer "I"? "She is not even so big as *me* [I am]." We have no objection to "I am," of course; but to object to "me" is to persist in knocking one's head against a stone wall. "Me" is idiomatic; no grammarian can get over it, and why should one waste one's energy against the inevitable? It is enough to warn against indubitable blunders of real importance.

MODERN LANGUAGES.

The Plays of Molière in French. With a new Translation by A. R. Waller. 1666–68. (3s. 6d. net. Grant Richards.)

This volume follows the first, which we noticed a month or two ago. It contains "Le Misanthrope," "Le Médecin malgré lui," "Méliceste," "Le Sicilien," and "Amphitryon"—all belonging to the years 1666–68. The juxtaposition of the French and English texts is extremely convenient for readers of every class. Mr. Waller's rendering is really a translation, and not a mere traduction, though he keeps very close to the original; and he shows much skill in overcoming the peculiar difficulties of his author. The get-up is exceedingly handy and artistic. The edition will be completed in eight volumes.

A Companion to French Verse, with Poems for Recitation. By H. J. Chaytor, M.A. (Murray.)

Mr. Chaytor sets forth in a brief and plain form the rules that need to be observed for the intelligent reading of French verse, and provides a judiciously selected anthology for illustration and practice. Dramatic poetry is not exemplified: "it is better read *en bloc* than in excerpts." The expression is occasionally clumsy, but the meaning is quite clear. Useful notes, biographical and metrical, are appended. The volume furnishes adequate assistance, and will be found to be very serviceable.

How to read French. By H. Blouet, B.A. (9d. Relfe.)

M. Blouet gives short and simple explanations of the pronunciation of French sounds that can be taught without the personal help of a teacher, together with a graduated series of easy passages for reading, followed by a vocabulary. An attractive and helpful little book.

Spanish Self-taught (Thimm's System). Edited by W. F. Harvey, M.A. (1s.; 1s. 6d. cloth. Marlborough.)

The general plan of the series is followed, the first intention being to supply the practical needs of travellers, commercial men, &c., in conversation. The book will be very useful for its main purpose. The pronunciation is particularly well explained and clearly indicated.

The Teaching of the Dutch Language in South Africa (1s. net, Longmans) contains a paper read at a Conference of Principals of Government Schools in the Orange River Colony on the subject by Dr. Brill, Rector of the Grey College, Bloemfontein, together with a letter addressed to the Rector by Mr. E. B. Sargant, Lord Milner's Educational Adviser, and pertinent official papers in an appendix. The pamphlet is very instructive on the language difficulty, which would soon cease to exist if Dr. Brill and Mr. Sargant were left to legislate on the matter. Obviously the two languages should be learnt together.

EDUCATION.

(1) *Herbart and the Herbartian Theory of Education: a Criticism.* By Alexander Darroch, M.A., Professor of Education in the University of Edinburgh. (3s. 6d. net. Longmans.) (2) *The Critics of Herbartianism, and other Matter contributory to the Study of the Herbartian Question.* By F. H. Hayward, D.Lit., M.A., B.Sc. (Lond.), B.A. (Cantab.), F.C.P., assisted by M. E. Thomas. (4s. 6d. Swan Sonnenschein.)

(1) Prof. Darroch presents five lectures that he delivered in the University of Edinburgh when he was still Lecturer on Educational Method and Psychology in the Church of Scotland Training College, Edinburgh, and assistant (we think) to Prof. Laurie in the University. He discusses Herbart's psychology and ethic and indicates their bearings on educational theory and practice. He comes to this (page 147): "The fundamental fallacy of the Herbartian school is the emphasis which it lays upon instruction. In opposition to this view, it is maintained that instruction is only the initiatory and preparatory stage; that it is in the training of the pupil to a knowledge of the relations embodied in the facts, and in disciplining him to the self-application of principles, that the work of education really consists. This is true not merely in the narrower sphere which we call theoretical, but applies in every sphere of activity, ethical or practical. I have shown that this error is due to the psychological basis on which the theory is founded, and the first thing we have to do is to become fully aware of this, and to realize that empirical psychology, whether that of Herbart or of other writers, can give us only partial guidance in our educational efforts." Prof. Darroch writes with lucidity and verve, and he stands apparently on the same philosophical and educational platform with Prof. Laurie. But, unfortunately, he proceeds on the assumption that Herbart's pedagogy is "derived," "deduced," or "developed," from his psychology, which was some years later by the calendar. Prof. James has told us, indeed, that "the former was not derived in any sense from the latter." Clearly, the assumption is not without risk, and, so far, it prejudices Prof. Darroch's argument. Dr. Hayward rubs in the objection, and others, with merciless energy and satisfaction.

(2) Dr. Hayward is an enthusiastic Herbartian. After a general introduction of comprehensive scope, he gives the history of Herbart and of his doctrines, reviews usefully the somewhat limited Herbartian literature in English, and then deals successively with fourteen critics of Herbartianism, mostly German. Prof. Darroch, moreover, is castigated in an appendix. The little volume condenses vividly and piquantly a very wide range of educational facts, thought, and criticism. We commend it cordially.

RELIGION.

"The Century Bible."—(1) *Genesis.* Edited by W. H. Bennett, D.D., M.A., Litt.D., Professor in New College and Hackney College, London. (2) *Judges and Ruth.* Edited by G. W. Thatcher, M.A., B.D., Mansfield College, Oxford. (3) *I. and II. Kings.* Edited by the Rev. Prof. Skinner, D.D. (2s. 6d. net each; 3s. 6d., leather. Jack.)

(1) Dr. Bennett opens the Old Testament series with a most able handling of Genesis on parallel lines with the New Testament series. He prints the text of the Revised Version, marking distinctly "the division of the text between the documents out of which Genesis was compiled"; and he supplies a very sufficient body of explanatory notes at the foot of the page. The introduction (63 pages out of 412) deals with (1) the message of Genesis; (2) the historical circumstances of the period; (3) how Genesis was written; (4) the traditions and the documents from which Genesis was compiled; (5) how Genesis has been handed down to us; (6) how our Genesis has been divided up into its original documents; and (7) the interpretation of Genesis, together with various tables based on the division of the text among the documents. The treatment will, of course, be too bold for some and too conservative for others. At any rate, it is scholarly and instructive, and gives an effective popular exposition of the more generally accepted results of modern criticism—results that all serious students should, at all events, be acquainted with. (2) Mr. Thatcher gives a plain and effective analysis of Judges, and thereon suggests "a probable history" of the origin and development of the canonical book. He has little scope in Ruth; but he says well all that need be said. The notes to both books are careful and scholarly, and afford all necessary explanations. Perhaps the summaries of the matter in the text might have been to some extent dispensed with. (3) Dr. Skinner has expended much labour upon his difficult books, and the careful reader will be very grateful for it. The introduction discusses (1) the historical and religious value of the work (with special insistence on the importance of getting close to "the actual facts—the solid unimpeachable realities—of Israel's history"); (2) the framework (the editorial formulas), (3) the compiler and his standpoint, (4) the second redaction and date, (5) the sources, (6) later additions and redactions, (7) the Greek version, and (8) the troublesome questions of chronology. The notes are full and pointed, and three important matters are handled in an appendix. There is a useful map of Syria, Assyria, and Babylonia, and an excellent plan of Jerusalem, as well as several illustrative figures in the notes. All the volumes are very ably treated, and the publishers have furnished the same admirable get-up as in the New Testament series.

AGRICULTURE.

Agricultural Geology. By J. E. Marr, M.A., F.R.S. (6s. Methuen.)

Mr. Marr writes with his eye on the schedule framed for the guidance of candidates for the International Diploma in Agriculture; but his book will of course be useful to a much wider circle than students reading for examinations in agriculture. Though technical terms are necessarily employed, the chapters are easy reading to any fairly well educated person. Mr. Marr treats of the general characters and composition of the more important rocks, with a view to building, metalling, and fertilizing; of the operations of the various

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geological agents, so as to illustrate the conditions that cause and control soil formation and water supply; and of the strata of the British Isles in the order of their formation, with reference to the disturbing movements and their effects, in order to secure the true reading of geological maps. "Two kinds of geological maps," he says, "are of particular importance to the student of agriculture—namely, that kind which exhibits the distribution and variations in the characters of the superficial accumulations which lie between the solid rocks and the soil (if the latter be present) and that which exhibits the distribution and variations in the characters of the solid rocks," and "the student should be thoroughly conversant with the significance of the various records which are entered upon these maps." The exposition is simple and lucid, and the geology is consistently subordinated to the purposes of the agriculturist. The work is effectively illustrated by a coloured geological map and 104 diagrams.

Agriculture for Beginners. By C. W. Burkett, Professor of Agriculture; F. L. Stevens, Professor of Biology; and D. H. Hill, Professor of English, in the North Carolina College of Agriculture and Mechanic Arts. (3s. 6d. Ginn.)

This powerful combine of authors has produced a book that is comprehensive and practical, if not very big. They hold, on grounds of experience, "that agriculture is an eminently teachable subject," and they "are convinced that the theory and practice of agriculture can be taught at one and the same time," and they conclude that the training of the farm lad "must begin in the public schools." To the teacher they say: "Lead the pupils out into the field, make simple experiments before them, and have them also perform experiments. Let them learn directly from Nature." The authors treat of the soil, plants (and their diseases), orchard and field insects, farm crops, domestic animals, and farm dairying. The handling is quite simple and practical. The book, though primarily meant for American schools, may be readily utilized here. Besides a frontispiece, there are 212 figures.

NEW EDITIONS AND REPRINTS.

Messrs. A. & C. Black issue a sixpenny edition of *A Historic View of the New Testament*, by Percy Gardner, Litt.D.—the Jowett Lectures delivered at the Passmore Edwards Settlement in London, 1901. Prof. Gardner "has modified a few passages," in deference to criticisms, but has "not found any serious or important alterations to be necessary." The inquiry is thoughtful, sober, and instructive; and the type is excellent.

Messrs. Watts publish for the Rationalist Press Association (and by arrangement with Messrs. Smith, Elder, & Co.) *An Agnostic's Apology*, by the late Sir Leslie Stephen, in their "Cheap Reprints" series (6d.). The print is very good.

Mr. Harrap provides a "Shorter Course" of *Heath's Practical French Grammar* (3s. 6d., Heath's "Modern Language Series"), by W. H. Fraser, B.A., and J. Squair, B.A., Professors of the Romance Department, University of Toronto. A dozen pages of extracts for translation from English into French have been omitted; and the exercises in Part II. have been "entirely reconstructed and very considerably condensed," and continuous passages relating to daily life have been substituted for the detached sentences of the original exercises. The work is thus rendered more manageable and effective for younger students.

Mr. Stead has added to "Books for the Bairns" *The Story of Joseph and his Brethren* (No. 96), and *The Ancient Mariner* (No. 97), both illustrated by Brinsley le Fanu (1d. each).

Mr. Fisher Unwin presents a "complete popular edition" of Prof. Villari's standard *Life and Times of Savonarola* (pages xlviii+792), with all the original illustrations, at the amazing price of 2s. 6d. net. The volume is uniform in size and binding with the cheap edition of Morley's "Cobden."——Mr. Unwin has also republished Ebenezer Elliott's *Corn-Law Rhymes*, with other verses (2d.), reprinting from the two-volume edition of Elliott's Poetical Works (1876).

The University Tutorial Press (Clive) issues an enlarged third edition of *The Early Principate—a History of Rome*, 44 B.C.–138 A.D., by A. H. Allcroft, M.A. (Oxon.), and J. H. Haydon, M.A. (Lond. and Camb.)—an able, independent, and comprehensive work. Also a "second impression" of Prof. Stout's useful volume *The Groundwork of Psychology* (4s. 6d.).

Messrs. E. J. Arnold & Son (Leeds) issue a twelfth edition of *Hamlet* (2s. 6d.), and a tenth edition of *King Lear* (2s.), by Thomas Page, in "Moffatt's Plays of Shakespeare." Both volumes are thoroughly revised and somewhat enlarged, various new features being added. The annotations, &c., are comprehensive, careful, and instructive.

Mr. Elkin Mathews issues a third edition of Mr. Jonathan Nield's *Guide to the best Novels and Tales* (4s. net), revised and enlarged so extensively, especially in details, as to be almost a new book—a well deserved popularity.

We regret that the price of Part II. of Clowes and Coleman's *Elementary Practical Chemistry* (Churchill) was accidentally misstated in our last issue. It ought to have been 2s. 6d. net (not 4s. 6d. net)—the same price as Part I.

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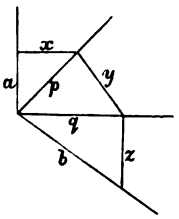
Theorem I.—If the angle between a and b be made up of three equal angles between the lines a, p, q, and b, and from any point in a a straight line x perpendicular to a be drawn to meet p, and from the point of intersection of p and x a straight line y perpendicular to p be drawn to meet q, and from the point of intersection of q and y a straight line z perpendicular to q be drawn to meet b, then



$$a^2/b^2 = x^3/z^3.$$

$$b^2 = q^2 + z^2 = z^2 + y^2 + p^2 = z^2 + y^2 + x^2 + a^2;$$

therefore $b^2 - a^2 = z^2 + y^2 + x^2$ .....(i.).

The triangles axp, pyq, qzb are similar; therefore $x/p = y/q$, *i.e.*, $x/y = p/q$ and also $y/z = p/q$; therefore $x/y = y/z$, and $y^2 = xz$.

Hence $b^2 - a^2 = z^2 + xz + x^2$ .....(ii.).

Now $x^2/a^2 = z^2/q^2 = z^2/(b^2 - z^2)$; therefore

$$a^2 = [x^2(b^2 - z^2)]/z^2 \quad \text{and} \quad b^2 - [x^2(b^2 - z^2)]/z^2 = x^2 + xz + z^2.$$

From this we get at once $b^2(z^2 - x^2) = z^3(x + z)$ or

$$b^2 = z^3/(z - x) \text{ .....(iii.).}$$

Also, from (ii.), $a^2 = b^2 - z^2 - xz - x^2$, *i.e.*,

$$a^2 = z^3/(z - x) - z^2 - xz - x^2 = x^3/(z - x) \text{ .....(iv.).}$$

Therefore, combining (iii.) and (iv.), $a^2/b^2 = x^3/z^3$.

Note.—The formula $a^2/b^2 = x^3/z^3$ holds good whatever angle a and x make; for $q = \sqrt[3]{(ab^2)}$ (being the second of two means between a and b); now $a/x = q/z = \sqrt[3]{(ab^2)}/z$; therefore $a/\sqrt{(ab^2)} = x/z$; therefore

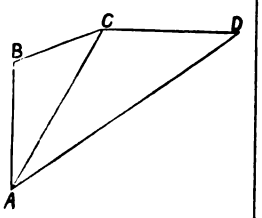
$$a^3/ab^2 = x^3/z^3 = a^2/b^2,$$

without reference to the angle between a and x.

Theorem II.—The formula $a^2/b^2 = x^3/z^3$ affords a proof of the following theorem: that the sum and difference of the parts of a line divided in extreme and mean ratio are as the cubes of the parts.

Lemma.—In the triangle ABC let

$$AC \cdot BC = AB^2.$$

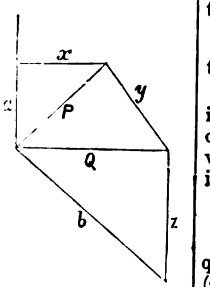


If from C a straight line CD be drawn making $\angle ACD = \angle B$, and CD be taken equal to AB, then the triangle formed by joining AD will be similar to the triangle ABC and $\angle CAD = \angle BAC$.

By hypothesis $AC \cdot CB = AB^2 = CD^2$; therefore $AC/CD = CD/CB = AB/CB$, also $\angle ACD = \angle B$; therefore the triangles ABC, ACD are similar, and, because $AC/CD = AB/BC$, therefore

$$\angle CAD = \angle BAC.$$

In the diagram let the angles between a and x, p and y, q and z be right angles, and let $a = y$; then



$$b^2 = z^2 + y^2 + x^2 + a^2 = z^2 + 2y^2 + x^2$$
$$= z^2 + 2xz + x^2;$$

therefore $b = x + z$ .....(1).

Again, $a^2 = y^2 = xz$; but $a^2 = x^3/(z - x)$ as shown above; therefore $xz = x^3/(z - x)$ or $z = x^2/(z - x)$. This evidently gives $xz = (z + x)(z - x)$. But, by (1), $b = x + z$; therefore $zx = b(z - x)$, or

$$z - x = xz/b = a^2/b \text{ .....(2).}$$

Now, since $z^2 - x^2 = xz$, therefore $(z + x)x = z^2$, *i.e.*, $(z + x)$ is a line cut in extreme and mean section, x and z being the parts, and $z > x$.

Combining (1) and (2), $(z + x)/(z - x) = b(a^2/b) = b^3/a^2 = z^3/x^3$.

[Rest in *Reprint*.]

15379. (Rev. Prebendary WHITWORTH, M.A.)—In how many different orders can the eight digits 3, 3, 3, 3, 7, 7, 7, 7 be arranged so as to express a number divisible by 37?

Solution by SOLIDUS.

As there are but 70 different numbers formed from the digits 7, 7, 7, 7, 3, 3, 3, 3 it would not take long to test each separately as to divisibility by 37. But the following analysis shortens the actual arithmetical work and shows that there are 18 such numbers divisible by 37, and no more. Since $7003 - 3007 = 3996 = 37 \times 108$, it follows that, if in any number we interchange a 3 and a 7 which are separated by two intervening digits, we do not alter the remainder of the number when divided by 37. Hence in a number consisting entirely of 7's and 3's the digits in the 1st, 4th, and 7th places may be permuted amongst one another without altering the divisibility by 37. Let us call these three places "the place-group I." Similarly the place-group II will consist of the 2nd, 5th, and 8th places, and place-group III of the 3rd and 6th places. All the possible numbers formed by 7, 7, 7, 7, 3, 3, 3, 3 might be classified as follows, according to the number of 7's in each place-group:—

I.....	3	3	2	2	2	1	1	1	0	0
II	1	0	2	1	0	3	2	1	3	2
III.....	0	1	0	1	2	0	1	2	1	2

Of these nine types of numbers it is easy by taking a specimen of each to verify that the only type divisible by 37 is that in which place-group I contains one 7, place-group II two 7's, and place-group III one 7, and that there are 18 permutations possible within the group. These are the numbers:—

33337777, 33377737, 73337737, 33737377, 33777337, 73737337,
37337773, 37373737, 77333737, 37733377, 37773337, 77733337,
37333777, 37377733, 77337733, 37737373, 37777333, 77737333.

15173. (Professor NEUBERG.)—Si tan α, tan β, tan γ sont les racines de l'équation $ax^3 + 3bx^2 + 3cx + d = 0$, former l'équation qui a pour racines tan α tan $(\beta + \gamma)$, tan β tan $(\gamma + \alpha)$, tan γ tan $(\alpha + \beta)$.

Solution by R. TUCKER, M.A., F. W. REEVES, B.A., *and* M. RAMPAL.

Proceeding in the usual way, we get

$y = \tan\alpha \tan(\beta + \gamma) = x[(-3b/a) - x]/(1 + d/ax) = -(ax^3 + 3bx^2)/(ax + d)$, *i.e.*, $y = (3cx + d)/(ax + d)$: hence x is linear in y, and the substitution $x = d(y - 1)/(3c - ay)$ gives the required equation in y.

15008. (D. BIDDLE.)—A hollow sphere of radius unity has concentric to it a smaller sphere of radius ρ. Find the greatest number of spheres that can be made to occupy the intervening space, each having internal contact with the one and external contact with the other original sphere.

Solution by J. P. HJORTH.

Imagining cones put with their tops at the centre of the original spheres, such that each of them is touching one of the added spheres, the number sought is equal to the number of circles of radius v which can be drawn on the surface of the sphere without cutting one another, where $\sin v = (1 - \rho)/(1 + \rho)$. Imagining the surface entirely covered with such circles, viz., when each is touching four others, and drawing the spherical tangents at the points of contact, the surface is divided into squares whose sides are equal to $2v$ and whose angles are $2x$, where

$$\tan x = \tan v/\sin v = (1 + \rho)/(2\sqrt{\rho});$$

the area of such a square is $t = \frac{1}{720}(8x - 360)4\pi$, and for the determination of n, the required number, we have $nt \leqslant 4\pi$, *i.e.*,

$$n(8x - 360) \leqslant 720, \quad n \leqslant 720/(8x - 360);$$

therefore the required number is the greatest integer in $720°/(8x - 360°)$.

[The Proposer observes that the above solution seems correct, except in making each added sphere be in contact with a restricted number of other similar ones, namely, four. This would be the case for a particular value of ρ only; as ρ approached unity, and the added spheres became infinitesimal, their centres would be arranged hexagonally.]

14735. (Professor MORLEY.)—Given five planes $a_1, \ldots, a_5$, and a quadric Q, let a quadric Q_n pass through the intersection of Q and a_n $(n = 1, \ldots, 5)$ and the four intersections of the four other planes. Then Q_n intersects Q in a second plane β_n, whose polar as to Q is a point a_n. Prove that the line a_1a_2 passes through the point (a_3, a_4, a_5); or, reciprocally, that the line a_1a_2 lies in the plane $a_3a_4a_5$. Also prove that, if one of the points a lies on Q, then all the points a lie on Q. Arrange the proof so as to hold for the analogous theorem in n dimensions. [The theorem in two dimensions that, given four lines and a conic C, and conics C_n being passed through the three intersections of three lines and the intersections of C and the fourth line, then, if one C_n touches C, all C_n's touch C, is M. Humbert's, *Comptes Rendus*, Vol. CXXIX.; and an elegant elementary proof is given by M. Bricard, *Nouv. Ann.*, Sér. 3, Vol. XIX., p. 369.]

Solution by A. M. NESBITT, M.A.

Take $Q \equiv (abcdfghpqr)(xyz\omega)^2 = 0$. Let the five planes $a_1, \ldots, a_5$ be $x = 0$, $y = 0$, $z = 0$, $\omega = 0$, and $Ax + By + Cz + D\omega = 0$; then

$$Q_5 \equiv Q - a_5L, \quad \text{where } L \equiv ax + \beta y + \gamma z + \delta\omega;$$

$$Q_4 \equiv Q - \omega L', \quad \text{where } L' \equiv \alpha' x + \ldots + \delta'\omega; \ldots.$$

Now Q_5 passes through $yz\omega$, $zx\omega$, $xy\omega$, and xyz; therefore $\alpha = a/A$,

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$\beta = b/B$, .. ; therefore the condition that L should touch Q is

$$\begin{vmatrix} a & h & g & p & a/A \\ h & b & f & q & b/B \\ g & f & c & r & c/C \\ p & q & r & d & d/D \\ a/A & b/B & c/C & d/D & . \end{vmatrix} = 0,$$

which is therefore the condition that a_5, the pole of L, lies on Q.

Again, since Q_4 passes through xyz, we have $\delta' = d$, and, since it also passes through xya_5, we have

$$cz^2 + dw^2 + 2rzw = (\gamma' z + d\omega)\omega \quad \text{or} \quad cz + 2r\omega = \gamma'\omega.$$

But, at xya_5, $Cz + D\omega = 0$; whence $\gamma' = (2r/D - c/C)D$. Similarly

$$\beta' = (2q/D - b/B)D, \quad \alpha' = (2p/D - a/A)D;$$

therefore $L'/D \equiv (2p/D - a/A)x + (2q/D - b/B)y + (2r/D - c/C)z + d/D\,\omega$, and the condition that a_4, the pole of L', lies on Q is

$$\begin{vmatrix} a & h & g & p & 2p/D - a/A \\ h & b & f & q & 2q/D - b/B \\ g & f & c & r & 2r/D - c/C \\ p & q & r & d & d/D \\ 2p/D - a/A & 2q/D - b/B & 2r/D - c/C & d/D & \end{vmatrix} = 0.$$

But this condition is equivalent to the former one, since, by multiplying the fourth column of the former by 2/D, and subtracting the fifth column, for a new fifth column that determinant has the first four rows identical with those above, and the fifth row is

$$a/A \quad b/B \quad c/C \quad d/D \quad 2d/D^2.$$

Now, making a new fifth row by subtracting this fifth row from 2/D times the fourth row, we see that the conditions are absolutely identical.

Again, if the co-ordinates of a_4 be $(x_4, y_4, z_4, \omega_4)$, of a_5 be $(x_5, \ldots)$, the conditions that a_4a_5 passes through $a_1a_2a_3$, *i.e.*, through $x = y = z = 0$, are

$$\begin{Vmatrix} 0 & 0 & 0 & 1 \\ x_4 & y_4 & z_4 & \omega_4 \\ x_5 & y_5 & z_5 & \omega_5 \end{Vmatrix} = 0, \quad i.e., \text{ that } y_4z_5 = y_5z_4, \; z_4x_5 = z_5x_4.$$

But, if a_4 be the pole of $L' = 0$, *i.e.*, of

$$(2p/D - a/A)x + (2q/D - b/B)y + (2r/D - c/C)z + d/D\,\omega = 0,$$

and (A), (B), (C), (D), F, G, H, P, Q, R denote the minors of $a, b, c, d, f, g, h, p, q, r$ in Δ, we have

$$\Delta y_4 = K[H\alpha' + (B)\beta' + F\gamma' + Q\delta'], \quad \Delta z_4 = K[G\alpha' + F\beta' + (C)\gamma' + R\delta'],$$
$$\Delta x_4 = K[(A)\alpha' + H\beta' + G\gamma' + P\delta'],$$

where $\alpha', \beta', \gamma', \delta'$ have the values given above, *i.e.*, that

$$x_4 : y_4 : z_4 = \begin{vmatrix} \alpha' & \beta' & \gamma' & \delta' \\ h & b & f & q \\ g & f & c & r \\ p & q & r & d \end{vmatrix} : \begin{vmatrix} a & h & g & p \\ \alpha' & \beta' & \gamma' & \delta' \\ g & f & c & r \\ p & q & r & d \end{vmatrix} . \begin{vmatrix} a & h & g & p \\ h & b & f & q \\ \alpha' & \beta' & \gamma' & \delta' \\ p & q & r & d \end{vmatrix} .$$

Similarly $x_5 : y_5 : z_5 =$ similar determinants with $\alpha, \beta, \gamma, \delta$ in place of $\alpha', \beta', \gamma', \delta'$. Thus, rejecting common factors, we get

$$y_4z_5 = \begin{vmatrix} a & h & g & p \\ h & b & f & q \\ a/A & b/B & c/C & d/D \\ p & q & r & d \end{vmatrix} \cdot \begin{vmatrix} a & h & g & p \\ 2p/D - a/A & 2q/D - b/B & 2r/D - c/C & d/D \\ g & f & c & r \\ p & q & r & d \end{vmatrix}.$$

In the first of these factors build up a new third row by subtracting the third row from 2/D times the fourth; this gives

$$(2p/D - a/A)(2q/D - b/B)(2r/D - c/C)\,d/D,$$

and in the second factor build up a new second row by subtracting the second row from 2/D times the fourth row; this gives

$$a/A \quad b/B \quad c/C \quad d/D.$$

Hence $y_4z_5 = y_5z_4$, and, similarly, $z_4x_5 = z_5x_4$; therefore a_4a_5 passes through $a_1a_2a_3$. The reciprocal proposition may be proved in a precisely similar way. [Rest in *Reprint*.]

15470. (Salutation.)—The sines of two angles are expressible in proper fractions the denominators of which differ by unity; and their cosines are inversely proportional to the respective denominators. The latter being given, find the several numerators.

Solution by W. Scrimgeour, M.A., B.Sc.

Let $\angle MOP = A$, $\angle MOQ = B$,

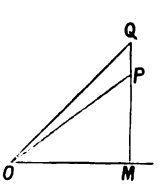
$OP = a$, $OQ = a+1$, $MP = x$, $MQ = y$.

Then $\sin A = x/a$, $\sin B = y/(a+1)$,

$\cos A = OM/a$, $\cos B = OM/(a+1)$.

Hence the last condition is satisfied, the cosines being inversely proportional to the denominators.

$$OM^2 = a^2 - x^2 = (a+1)^2 - y^2;$$



therefore $y^2 - x^2 = 2a + 1$. Let b, c be the factors of $2a+1$; therefore $(y+x)(y-x) = bc$. Let $y+x = b$, $y-x = c$; therefore $y = \frac{1}{2}(b+c)$, $x = \frac{1}{2}(b-c)$. Since $2a+1$ is odd, b and c are both odd; therefore x and y are integral. Give b, c all possible simultaneous values, and all the solutions should be obtained. Thus, if $a = 7$, $2a+1 = 15 = 3(5)$; therefore $y = 4$, $x = 1$; therefore $\sin A = \frac{1}{7}$, $\sin B = \frac{4}{5}$; $\cos A = \frac{1}{7}\sqrt{(48)}$, $\cos B = \frac{1}{5}\sqrt{(48)}$. This value of a also gives $y = 8$, $x = 7$.

[There is always the solution $x = a$, $y = a+1$, which gives

$$\cos A = \cos B = 0.]$$

$a = 22$ gives two other solutions, $x = 6$, $y = 9$; $x = 2$, $y = 7$.

Note.—There is possibly a general expression giving the *number* of values for x and y corresponding to a given value of a.

14821. (Professor Cochez.)—Construire un triangle connaissant la hauteur et la bissectrice de l'angle A ainsi que la somme $b + c = m$.

Solution by C. E. Youngman, M.A.

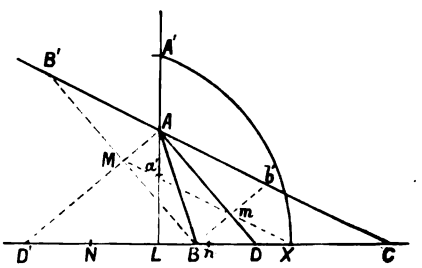
Let ABC be the required triangle, with CA produced till $AB' = AB$; AL the altitude; AD, AD' the bisectors of the angle A; and M, N, X the mid-points of BB', LD', and BC. Then

$$XM^2 = XL \cdot XD';$$

for

$$\angle XML = \angle XMB + \angle BML = \tfrac{1}{2}\angle A + \angle BAL = \angle DAL = \angle LD'M,$$

and XM touches the circle LD'M.



Now the triangle ALD is given; therefore also AD' and N; and to find X we need only take LA' along LA of the given length $XM = \frac{1}{2}(b+c)$, and then $NX = NA'$; and M, B, C follow in that order.

If $b - c$ were given instead of $b + c$, the same construction would do, modified as shown by the small letters. The problem is, in effect: To draw across an angle DD'B' (or D'Db') through a point A on its bisector, a line CB' (or Cb') of given length.

15359. (Robt. W. D. Christie.)—Without the use of the method of continued fractions, solve the equation $X^2 - 149Y^2 = 1$, and generalize your method.

Solutions (I.) *by* Lt.-Col. Allan Cunningham, R.E.; (II.) *by* R. F. Davis, M.A.; (III.) *by* A. H. Bell.

(I.) Since $13^2 - 149 \cdot 1^2 = +20$ and $12^2 - 149 \cdot 1^2 = -5$, therefore

$$-4 = (13^2 - 149 \cdot 1^2)/(12^2 - 149 \cdot 1^2) = t_1^2 - 149 \cdot u_1^2, \text{ suppose.}$$

The values of t_1, u_1 may be found by the method of conformal division (see Col. Cunningham's paper "On the Connexion of Quadratic Forms" in *Proc. Lond. Math. Soc.*, Vol. xxviii., 1896, p. 289), whence

$$t_1 = \tfrac{1}{2}(13 \cdot 12 + 149 \cdot 1 \cdot 1) = 61, \quad u_1 = \tfrac{1}{2}(13 \cdot 1 + 12 \cdot 1) = 5.$$

Thus $61^2 - 149 \cdot 5^2 = -4$. Now square this; then

$$(61^2 + 149 \cdot 5^2)^2 - 149(2 \cdot 61 \cdot 5)^2 = 7446^2 - 149 \cdot 610^2 = +16,$$

giving

$$3723^2 - 149 \cdot 305^2 = +4.$$

Hence $-1 = (3723^2 - 149 \cdot 305^2)/(61^2 - 149 \cdot 5^2) = t_2^2 - 149 \cdot u_2^2$ suppose; and, by conformal division,

$$t_2 = \tfrac{1}{4}(61 \cdot 3723 + 149 \cdot 5 \cdot 305) = 113582,$$
$$u_2 = \tfrac{1}{4}(61 \cdot 305 + 5 \cdot 3723) = 9305;$$

therefore $113582^2 - 149 \cdot 305^2 = -1$. Now square this; then

$$(113582^2 + 149 \cdot 305^2)^2 - 149(2 \cdot 305 \cdot 113582)^2 = +1,$$

or

$$25801741449^2 - 149 \cdot 2113761020^2 = +1.$$

To generalize the above, *i.e.*, to find $X^2 - D \cdot Y^2 = +1$ (D being given), compute the quantities $x_1^2 - D \cdot y_1^2 = a_1$, $x_2^2 - D \cdot y_2^2 = a_2$, ... for any chosen values of (x_1, y_1), (x_2, y_2), ..., until two results a_m, a_n are obtained such that $a_n = k \cdot a_m$. Then (in some cases not easily specified) the value of $k = a_n/a_m$ can be obtained in the form $t_1^2 - D \cdot u_1^2 = k$, by conformal division.

By further trials, another partition of k may certainly be found, say, $\pm k = t_1'^2 - Du_1'^2$. When this is found the partition $X'^2 - D \cdot Y'^2 = \pm 1$ can always be found by conformal division; and, if the result is -1 (*i.e.*, if the values of k above be of opposite sign), then $X = X'^2 + D \cdot Y'^2$, $Y = 2X'Y'$ will satisfy $X^2 - DY^2 = +1$.

(II.) If $x = \alpha$, $y = \beta$ satisfy the equation $x^2 - Ny^2 = -1$, it may easily be shown that $x = 2N\beta^2 - 1$, $y = 2\alpha\beta$ satisfy the equation $x^2 - Ny^2 = +1$. For instance, $x = 18$, $y = 5$ satisfy the equation $x^2 - 13y^2 = -1$; therefore $x = 649$, $y = 180$ must satisfy the equation $x^2 - 13y^2 = 1$. Let us

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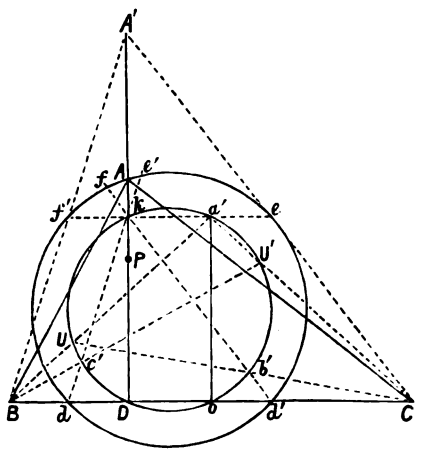
endeavour to solve $x^2-149y^2=-1$ as a preliminary step to solving the equation $x^2-149y^2=1$.

$$149y^2=1+x^2=(5u-10v)^2+(10u+7v)=149(u^2+v^2).$$

Hence we require to make $7u-10v=1$ and $u^2+v^2=y^2$. The first condition is satisfied by taking $u=10t+3$, $v=7t+2$; and the second condition gives $(10t+3)^2+(7t+2)^2=\square$, whence $t=762$ (by the help of $t=-\frac{1}{3}$, for which $10t+3:7t+2=4:3$). Thus $u=7623$, $v=5336$; and $x=113,582$, $y=9,305$ satisfy the equation $x^2-149y^2=-1$. Therefore $x=2.149.9,305^2-1$ and $y=2.113,582.9,305$ will satisfy the equation $x^2-149y^2=1$. [For rest *v.* next issue.]

14862. (John Griffiths, M.A.)—If D be the foot of the perpendicular from the vertex A upon the base BC of a triangle ABC, whose orthocentre is P, and DA be produced to A′ so that AA′ = DP, prove that the nine-point circle of ABC is a G.B. circle (generalized Brocard circle) of A′BC.

Solution by C. E. Youngman, M.A.



Let o, k be the mid-points of BC and DA′; then k is also mid-point of AP, and ok is a diameter of the circle. Find d, d', e, f', the mid-points of BD, DC, CA′, A′B; then $f'ke$ is parallel to BC, and kd, kd' are parallel to A′B, A′C or to oe, of'. Also $f'd$ and $d'e$ are both perpendicular to BC; therefore d, d', e, f lie on a circle. This circle is concentric with the other, since the diameters de and ok bisect each other. Let e', f be the points at which it cuts kd, kd' again.

Project o upon ke, kf, kd into the points a', b', c'; these will be vertices of a triangle inversely similar to A′BC, inscribed in the circle ok; and we have $a'e=f'k=Bd$, $b'f=d'k=Ce$; hence Ba' and Cb' are parallel to de and ef. Let them meet at U; then $\angle b'Ua'=\angle def=\angle dd'f=\angle BCA'=\angle b'c'a'$; therefore U lies on the circle ok, and also on the circle through BC touching CA′. Similarly, Bc' and Ca' meet at U′, lying on the circle ok and the circle through BC touching BA′. Hence

$$\angle UCA'=\angle UBC=\angle U'CB=\angle U'BA'=\omega'=90°-\angle Ua'o$$
$$=90°-\angle Uko=\angle Uok=\angle U'ok.$$

Therefore U, U′ are an isogonal pair in A′BC, and possess properties analogous to those of its Brocard points. We have also

$$\cot\omega'=Bo/oa'=BC/DA'=\cot A'BC+\cot A'CB.$$

Since parallels through d, e, f to A′B, BC, CA′ meet at k, parallels through C, A′, B to ef, fd, de must also meet; therefore A′U is parallel to fd; therefore CUA′ is a right angle; and similarly with A′U′B.

4991. (G. A. Ogilvie.)—Show (1) that there is only one point the polars of which with respect to four conics form a parallelogram, and (2) find the area of the parallelogram for any four conics.

Note on the above Question by R. F. Whitehead, B.A.

Suppose the polars of a point P with regard to two conics centres C_1, C_2 to be parallel, meeting in a point Q at infinity. Since C_1P, C_2P are the polars of Q, (1, 1) relations connect the lines C_1P, C_2P with Q, which traverses the line infinity, and therefore a (1, 1) relation connects them with each other. Hence P describes a conic through C_1C_2; obviously the conic will circumscribe the self-polar triangle. Hence, if we take the conics in pairs S_1, S_2 and S_3, S_4, there will be *four* points, the intersections of two such conics, whose polars form a parallelogram. Altogether there will be *twelve* such points.

15074. (Professor Neuberg.)—Construire le centre et les asymptotes de l'hyperbole équilatère qui passe par deux points donnés A, B et qui touche une droite donnée d en un point donné C.

Solution by Professor Sanjána, M.A., *and* F. W. Reeves, B.A.

Since three points A, B, C on the curve are given, a fourth point, viz., the orthocentre O of the triangle ABC, is known to lie on it. The problem therefore reduces to the description of a conic passing through A, B, C, O, and touching d; this is easily effected. (See Besant's *Geometrical Conics*, § 250.)

QUESTIONS FOR SOLUTION.

15534. (Hon. G. R. Dick.)—If Δ denotes the operator of the calculus of finite differences and $E=1+\Delta$, prove that

$$(x\Delta^2E^{-1})^n=\Delta^{n-1}(xE^{-1})^n\Delta^{n+1}.$$

15535. (Rev. F. H. Jackson.)—If $(x)_n=x(x-1)(x-2)\ldots(x-n+1)$, find a product expression for the series

$$(x)_n(y)_n-n(x)_{n-1}(y)_{n-1}(x)_1(y)_1+\{n[(n-1)]/2!\}(x)_{n-2}(y)_{n-2}(x)_2(y)_2-\ldots,$$

a curious analogy of Vandermonde's theorem. The series

$$F(a.a-\delta+1.a-\epsilon+1.\delta-\epsilon-1)$$

summed by Prof. A. C. Dixon can be transformed into the above for all values of n.

15536. (*Communicated by* J. L. S. Hatton.)—Evaluate the determinant

$$\begin{vmatrix} a & b & c & d & e & f & g & h \\ h & a & b & c & d & e & f & g \\ g & h & a & b & c & d & e & f \\ f & g & h & a & b & c & d & e \\ h & g & f & e & d & c & b & a \\ a & h & g & f & e & d & & \\ b & a & h & g & & e & d & c \\ c & b & a & h & g & f & e & d \end{vmatrix}.$$

15537. (*Communicated by* H. J. Woodall, A.R.C.S.)—Interpret $x^{\sqrt{2}}$.

15538. (W. H. Blythe, M.A.)—There are N bullets in a bag to be divided among n people. The first takes what he considers to be his share, finding one remainder which he lays aside. The second, not knowing the first has removed any of the bullets, does exactly the same thing, and each of the people in turn repeats the process. Finally, the remaining bullets are divided into n equal portions, with one remainder, each person taking his share. Show that N is of the form An^p-n+1, where A is any positive integer, and p is not less than $n+1$. Find an expression for the share of each person.

15539. (Lt.-Col. Allan Cunningham, R.E.)—For what forms of m is $X^3\pm1\equiv0\pmod m$? Show how to find X when m is given. Ex.—$m=99991$.

15540. (Robt. W. D. Christie.)—Solve the equation in positive integers

$$[\tfrac{1}{2}(p+e-f)][\tfrac{1}{2}(p+f-e)]-p[\tfrac{1}{2}(p-e-f)]=1,$$

when p is any prime whatever of form $4m+1$. Will it be true also for n?

15541. (Rev. T. Roach, M.A.)—Sum the series

$$(1)\quad \frac{1}{1.2}-\frac{1}{5.6}+\frac{1}{9.10}-\ldots, \qquad (2)\quad \frac{1}{2}-\frac{2}{5}+\frac{3}{8}-\frac{4}{11}+\ldots.$$

15542. (D. Biddle.)—A triangle is inscribed in a circle of given radius, and has its centroid at a given distance from the centre. (1) Define the limits of area of inscribed triangles whose centroids are thus placed; and (2), given any area within those limits, inscribe a second triangle having this area, and whose centroid occupies the same position as that of the former or one equidistant from the centre of the circle.

15543. (Professor S. Sircom.)—If D, E, F be any points on the sides BC, CA, AB respectively of a triangle ABC, and X, Y, Z the points in which EF, FD, DE respectively meet the same sides, then

$$(DZ.EX.FY)/(DY.EZ.FX)=-(AF.BD.CE)/(AE.BF.CD).$$

15544. (Professor Lauvernay.)—Démontrer qu'il existe un triangle, et un seul, tel que la circonférence inscrite a ce triangle passe par son orthocentre et son centre de gravité.

15545. (Professor Cochez.)—Étudier la courbe

$$3x^2y-3y(2a-y)x+y^3-3ay^2+3a^3=0.$$

15546. (Professor Nanson.)—Find the locus of the foci of a conic touching four given lines, and deduce the locus of the focus of a parabola touching three given lines.

15547. (Professor Sanjána, M.A.)—A central conic, whose minor axis is of given length, touches two fixed straight lines; if one focus moves on a given straight line, prove that the other moves on a hyperbola having its asymptotes parallel to the fixed lines.

15548. (Professor Neuberg.)—Soient P, Q deux points d'une parabole symétriques par rapport à l'axe de cette courbe. La perpendiculaire élevée en un point quelconque M de la parabole sur la corde PM rencontre le diamètre passant par Q en un point N. Démontrer que la projection de MN sur le diamètre QN est constante.

15549. (A. M. Nesbitt, M.A.)—CP, CQ are conjugate semi-diameters of an ellipse. If the triangle CPQ be of constant area, prove that the envelope of PQ is a similar ellipse.

15550. (H. Bateman, B.A.)—Prove that, if a prism whose cross-section is a regular polygon be of the right density, it can float in water with one generator and the middle point of a side in the surface.

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15551. (Professor Langhorne Orchard, M.A., B.Sc.)—Show *from first principles* that the freezing-point of water is lowered by increase of pressure.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

9811. If masses P, Q, and R be placed at the vertices A, B, and C respectively of the triangle of reference, show that the trilinear equations to the principal axes at the centre of gravity of the masses will be

$$lx + my + nz = 0 \quad \text{and} \quad l'x + m'y + n'z = 0,$$

where $l : m : n$ and $l' : m' : n'$ are determined by the equations

$$P(l/a) + Q(m/b) + R(n/c) = 0, \quad P(l'/a) + Q(m'/b) + R(n'/c) = 0,$$

$$P(ll'/a^2) + Q(mm'/b^2) + R(nn'/c^2) = 0,$$

and

$$ll' + mm' + nn' - (mn' + m'n)\cos A - (nl' + n'l)\cos B - (lm' + l'm)\cos C = 0,$$

and that at any point the principal axes are conjugate (*i.e.*, each passes through the pole of the other) with respect to the conics

$$Pl^2/a^2 + Qm^2/b^2 + Rn^2/c^2 = 0$$

and

$$l^2 + m^2 + n^2 - 2mn\cos A - 2nl\cos B - 2lm\cos C = 0$$

(the circular points at infinity).

9862. (Capitaine De Rocquigny.)—Les n premiers nombres entiers sont dans une urne. On en tire au hasard trois. Quelle est la probabilité que l'un de ces nombres est égal à la somme des deux autres ou égal à leur demi-sommet ?

9870. (R. Tucker, M.A.)—O, Ω, Ω' are the in-centre and Brocard points of a triangle ABC. Ω_1, Ω_1'; Ω_2, Ω_2'; Ω_3, Ω_3' are the images of Ω, Ω' with respect to AO, BO, CO. Prove that, if ρ_1, ρ_2 are the radii of the circles round Ω, Ω_1, Ω_2, Ω_3; Ω', Ω_1', Ω_2', Ω_3' respectively, and if $\lambda^2 \equiv a^2b^2 + b^2c^2 + c^2a^2$, then

$$\rho_1^2 \sim \rho_2^2 = [abc\,\Pi(a-b)]/\lambda^2, \quad \rho_1^2 + \rho_2^2 = abc\,[\Sigma a\,\Sigma a^3 - (\Sigma a^2)^2]/(2s\lambda^2).$$

The equations to the two circles in trilinear co-ordinates are easily obtained from the fact that they are concentric with the in-circle of ABC.

9935. (Professor Schoute.)—To show that the diameters of a general quadratic complex (Plücker, *Neue Geometrie des Raumes*, p. 228) form a congruency (2, 1).

10261. (Professor Dépiez.)—On décrit des coniques semblables entre elles, ayant même centre O et passant par un même point P. Démontrer que (1) les sommets et les foyers de ces courbes décrivent des podaires de coniques; (2) le centre du cercle osculateur en P décrit une quartique; (3) les directrices enveloppent une conique.

10772. (G. H. Bryan, M.A.)—A liquid film is supported on a framework in the form of an equilateral triangle of side a. If the difference of pressures (p) on the two sides of the film is so small that the surface of the film is nearly plane, prove that its equation may be written $z = \frac{2}{3}a^2(p/T)\xi\eta\zeta$, where z is the perpendicular distance of any point from the plane of the triangle, ξ, η, ζ the *areal* co-ordinates of the foot of this perpendicular, and T the surface tension.

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

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Thursday, March 10th, 1904.—Dr. E. W. Hobson, Vice-President, and, temporarily, Prof. Elliott, Vice-President, in the Chair.

Mr. S. T. Shovelton was elected a member.

The following papers were communicated:—

"On Inner Limiting Sets of Points in a Linear Interval": Dr. E. W. Hobson.

"Illustrations of Modes of Decay of Vibratory Motions": Prof. A. E. H. Love.

"The Unique Expression of a Quantic of any Order in any Number of Variables with an Application to Binary Perpetuants": Mr. P. W. Wood.

"The Derivation of Generalized Bessel Coefficients from a Function analogous to the Exponential": Rev. F. H. Jackson.

"Transformation of Generalized Legendre Functions": Rev. F. H. Jackson.

"Singularities of Functions determined by Taylor's Series": Mr. H. M. Macdonald.

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The Educational Times.

The Mosely Educational Commission.

Mr. Mosely has lost no time in getting together the reports of the members of his Educational Commission to the United States. They fill a goodly volume of four hundred close-printed pages, which may be obtained from the publishers (the Co-operative Printing Society, Tudor Street, E.C.) at the nominal price of one shilling; nay, Mr. Mosely has arranged that "any Education Authority in the British Isles (or member of same), county councillor, local manager, head master, head mistress, or registered teacher may obtain copies *free* on forwarding to the publishers the cost of postage (4d.) and stating qualifications." We trust that both the general public and the special classes mentioned will liberally avail themselves of Mr. Mosely's generosity. For it is only in this way that they are likely to appreciate the variety of matter and opinion exhibited in the volume, no adequate summary being possible within the narrow newspaper limits. And the main value of the Report lies, not so much in the views expressed upon the general question, but rather in the independent opinions of the special representatives of special departments or of special aspects. The reports vary greatly in importance, as in extent: some are the impressions of a first visit for a few weeks, others include comparisons with longer previous visits; most are the skilled expression of wide and prolonged experience, a few the rough and ready results of a more limited outlook. Yet there is not one of them but carries a message of suggestion, whether by way of warning or of encouragement. Mr. Mosely deserves the warm thanks of all serious educationists for his thoughtful and public-spirited enterprise. And everybody — and especially such as know American hospitality—will appreciate the warmth of his gratifying reception on the other side of the Atlantic, and join in his grateful acknowledgments.

Mr. Mosely prefixes an account of the ready assistance accorded him by the Board of Education, and of the objects he proposed. The subjects of investigation were ranged under four heads:

1. The development of individuality in the primary schools.
2. The social and intellectual effects of the wide distribution of secondary education.
3. The effect of specific instruction given (1) in business methods, (2) in applied science.
4. The present state of opinion as to the value of professional and technical instruction of University rank designed with special reference to the tasks of business life.

The essential feature of the inquiry, to Mr. Mosely's own mind at least, was "to ascertain how far education in the United States is responsible for her industrial progress." Personally he is "convinced that, if the British Empire is to hold its own, our old industrial methods will have to be dropped, and especially our present method of popular education will have to be changed." He was deeply impressed with "the intense belief of the Americans in the education of the masses," with their conviction that "from a purely business point of view the money spent on education is a magnificent investment for their country," and with the fine educational buildings and their lavish equipment. He was particularly struck with "the success attained in making the scholars self-reliant—in bringing out their individual qualities and teaching them to reason"; indeed, "in some respects," he says, "this seems to me to be the most important factor of all in American education, and I think it largely accounts for the success of the pupils in after life." The comments of many of the Commissioners on this feature of the schools are very instructive, tending to give weight to other considerations as factors in the result. At the same time Mr. Mosely looks with less favour on certain other aspects of American education: the large preponderance of women teachers (for "teacher" is feminine in the American vocabulary), the inadequacy of salaries, the neglect of musical education amongst the school-children, and other minor defects, "merely those of youth." He is very fair-minded in his remarks, and, although he "does not pose as an educationalist," his comments are very well worth study.

The Joint Report of the Commissioners is very brief and pointed. They are all "deeply impressed" with the evidences of "the absolute belief in the value of education, both to the community at large and to agriculture, commerce, manufactures, and the service of the State." This belief in education has in the past been "the effect rather than the cause of American prosperity," but "during the last quarter

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of a century education has had a powerful and far-reaching influence, and it cannot be doubted that in the future it will become more and more the cause of industrial and commercial progress and of national well-being." They accordingly "desire to impress on the British public the absolute need of immediate preparation on our part to meet the competition" of American commerce, conducted by "trained men, gifted with both enterprise and knowledge." They are also impressed with the spirit that animates teachers and pupils alike; and they remark that "the absence of class prejudices and of any 'religious difficulty' serves most materially to facilitate the work of the schools." They note the most important movement towards the closest connexion between theory and practice: "the services of experts in various branches of knowledge are, therefore, held in high esteem and are in constant demand." They are very forcibly struck with "the important part which manual training is beginning to assume in the schools." Though impressed with the public and private liberality on behalf of education, they regard the remuneration of teachers as "by no means always placed on a satisfactory basis"; and, with the exception of Prof. Armstrong and Mr. Blair, they "view somewhat with alarm the growing preponderance of women teachers." Lastly, they draw attention to "the extent to which the work of education is organized and its various grades co-ordinated," and impress the need of effecting similar organization in this country.

The generalities are limited in the particular reports in various ways and in various degrees; and we must refer the reader to the volume itself. Apart from the more technical reports, it may not be invidious to draw special attention to the comments of Dr. Gray (Bradfield College), Principals Reichel and Rhŷs, and Dr. Gregory Foster. But the most caustic of all is Prof. Armstrong. For instance:

> In point of fact, American cuteness would seem to be conditioned by environment rather than by school education. It is difficult to trace the development of any American peculiarities to the schools—or to find any evidence even that the schools seek to utilize and develop the national idiosyncrasies.
>
> The belief in secondary education, especially for boys, is far less general [than the belief in elementary education]—it is probably no greater than ours—and yet it seems to me that it is by the existence of a well developed public high-school system that America is distinguished most from us, and potentially placed most in advance of us.
>
> American education is for the most part still governed by eminently academic and conservative traditions: in some respects it lacks depth and practical outlook to a strange extent.
>
> Evening class instruction, such as has grown up under our Science and Art Department, is almost unknown there.
>
> In interior arrangements even the most modern common schools are not superior to our own.
>
> The amount of attention paid in the [common] schools to reading and composition is in no way sufficient or satisfactory. . . . I was favourably impressed by the way in which English literature was taught [in the public high schools]; but I could not discover that the teaching was carried to a logical end and fondness for reading inculcated.
>
> The teaching of drawing [in the common schools] is also undeveloped. . . . I did not learn that the attempt was being made anywhere to put the teaching of arithmetic on a practical common-sense basis. . . . The schools are undoubtedly behind ours in promoting manual training, and even more bookish than ours in their tendencies. . . . The Nature-study lessons I witnessed, when not specifically botanical or zoological and scientific in character, were eminently superficial and worthless.

All the same, it would be unreasonable to expect perfection, even in America; and, with all deductions, there still remains in the detail of these reports a vast amount of illuminative criticism, which, it is to be hoped, will be turned to practical account here, as it no doubt will in America. Even Prof. Armstrong is far from being wholly adverse: he praises a good thing as vigorously as he denounces a bad thing. The whole Report is certainly a very valuable addition to the educational library. But it must be read and reduced to practice.

The Future of the Schools.

THERE will be no occasion to despair of elementary education so long as the National Union of Teachers produces, and receives with appreciation, such thoughtful discourses as the Presidential Address of Mr. Sharples at Portsmouth. In breadth of conception, in elevation of tone, and in earnestness of concentration upon the main point—the future of the children—this address offers impressive matter of consideration to those that are wrangling over tithes of mint and anise and cummin, as well as to those that have not yet grasped the range of the problems confronting the nation in these latter days. Mr. Sharples "implores the leaders of our Christian Churches to come to some common agreement for the sake of the children"; for otherwise "men will be driven to the only logical conclusion—secular instruction alone" (as many have already been driven)—a result that he, with most thoughtful men, would regard as a national calamity: "once the Bible is banished from the schools it will soon become a rare book in the home." There can be no doubt that the mass of the people are in favour of simple Biblical teaching in the schools; and it is not inside the schools, but outside of them, that there is—speaking broadly—any such thing as a "religious difficulty."

Mr. Sharples justly acknowledges that, as a rule, "the Education Committees have taken up their work with a broad-minded desire to carry out the provisions of the Act in the best interests of the children and the nation." Such an expression of confidence is significant, and it is very welcome. The exceptions will soon have to bend to conformity with the rule. The Committees are at once confronted with "a startling dearth of efficient teaching power." "Imagine a county in the position of Derbyshire," says Mr. Sharples, "where we read: 'We have particulars of schools where there is only one certificated teacher for each 100, 105, 107, 113, 120, 123, 124, 142, 145, 171, 180, 235, 237, 240, and even 353 children.'" There are counties that need a reinforcement of hundreds of certificated teachers. The remedy of "this enormous shortage" is "a prime and urgent necessity." Of course, Mr. Sharples has no alternative but to demand more money: the thing can be done upon no other terms than "by making the salaries of teachers worthy of their office, and sufficiently attractive to bring in a good supply of the 'raw material.'" The memorandum of the Board of Education on the training of pupil-teachers and students in training colleges is admirable in sense and in tone: but where is the money to raise its pious aspirations to solid facts of practical business? "If education is a branch of the national service," says Mr. Sharples, "the training of teachers should be a national, and not a local, charge; teachers will be trained, not for the locality, but for the nation." The contention seems obvious enough. The

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House of Commons, however, has already agreed that the greater part of the cost shall be charged on the national Exchequer. But a still more definite settlement of the route would save misdirected expenditure and irksome wanderings along doubtful roads; but somehow it is all against the grain of our political and administrative genius to take thorough and decisive measures on distinct principles.

The complicated and difficult question of co-ordination will scarcely be forced: it will have to grow to solution. There is no longer any question of the importance of enabling the fit children to pass on from the primary school to higher and wider fields. "In hundreds of villages," however, Mr. Sharples points out, "it is not possible to link up the elementary schools with a good secondary school," even if the children did not continue to leave before being adequately prepared for such a school. If they stay, then arises the question of a sufficient staff; and Mr. Sharples suggests "the placing at the top class of every school in the country an additional certificated teacher." The proposal appears to be effective, and it is clearly simple; perhaps it is "open to the poorest Authority"; but at the same time it emphasizes the pressure of the question of an adequate supply of teachers. The higher-grade elementary schools, in spite of their chequered experiences, will now doubtless remain one —as, in many cases, they have been the only—bridge to the technical schools; and, if it be the case that "before there can be a real linking-up of the primary schools to the grammar schools the curricula of the lower forms in the latter schools would require a radical change," then such a change will be inevitable, whether it do or do not involve a postponement of such subjects as Latin and Greek to a later age. There is much to be considered at this point, and it is to be hoped that no changes will be rashly effected. Not that we should wish any undue delay; but it is well to be sure of the facts, and all the pertinent facts, before proceeding to definitive action.

The organization of the secondary schools, Mr. Sharples acknowledges, will be the most difficult task of the Authorities; and the correlation of the curricula of the various types of schools will be the stiffest job of all. As to private schools, Mr. Sharples says:

> For a time, at least, it will be necessary to utilize the private schools now in existence, and, after careful inquiry as to curricula and equipment, it may be necessary to subsidize them, subject to the usual safeguards as to representation on the management. None of this type should be aided, however, whose curricula do not form a link which will couple on to the technical school or University College.

Here, again, is a host of complications which need not be discussed speculatively; only it will be well to keep steadily in view the value of independent phases of educational work as well as the advantages of co-ordination. As to evening schools, Mr. Sharples revives an old contention of his: "that all youths employed in skilled trades or commercial houses should be compelled to attend classes two or three evenings per week in winter—classes where they could be taught the principles underlying the practical work they are taught in the workshops," the employers paying the fees in consideration of the benefit they receive. This course, he says, is actually taken now by many enlightened employers. Well, employers can lay down their own conditions—at least, some of them; and no doubt young fellows spend much of their time to less purpose; yet the principle of compulsion ought to be applied with very great hesitation. We are aware of the contrast at Charlottenburg: but we should like to see our Charlottenburgs filled by the natural force of a healthy public opinion, which will be all the better if it grow without compulsion. Mr. Sharples concludes with a warning note on the near possibilities of conflict between the modes of Government inspection and of Local Authority inspection, and he not obscurely hints that there is danger of a revival in local methods of ideas that have been happily abandoned in public methods. Let us hope that wiser counsels will prevail.

NOTES.

Now is "the appointed day" for the operation of the London Education Act. There has been not a little misgiving as to the prudence of the County Council in undertaking so promptly the conduct of such a large and complicated business. From Sir William Anson's statement it appears that only thirty-eight Education Committees have put the general Act in operation at the earliest possible date, others finding themselves compelled by the difficulty of making adequate arrangements to ask for postponements varying from one up to twelve months. The London County Council, however, has never been lacking in courage or confidence and one can but hope that its present alacrity will be justified in the result.

While, however, the Act comes generally into operation on May 1, the Board of Education have intimated (April 22) that there must be delay on one or two points. They

> appoint as the appointed day for the purposes of Sub-section (1) of Section 2 of the Act, and for the purpose of the repeal in London of Section 15 of the Elementary Education Act, 1870, the 1st day of July, 1904, or such later day or days as may be appointed by the Board of Education hereafter for the purpose.

The reference is to the appointment and constitution of bodies of managers of public elementary schools provided by the Local Education Authority.

The Scottish Education Bill has been generally received with a chorus of satisfaction—a natural result of the knowledge of Scottish opinion possessed by the late and the present Secretary for Scotland. Much has been made—and, probably enough, more will still be made—of the divergences in principle between the English Act and the Scottish Bill; but a sufficient explanation lies in the difference of the cases. As will be seen from a memorandum we reprint on another page, the Educational Institute gives the Bill a warm welcome, and offers criticisms only in details—criticisms, however, that ought to carry great weight. The tone is thoroughly democratic, and there can be no doubt that the Institute faithfully reflects the opinion of the country. If there are to be four Provincial Councils, it does not appear why there should not be five—Dundee already complains, and reasonably, that it is not constituted a centre; but there seems to be a tolerably strong feeling that a simple National Council would be better, whether

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alone or working through Provincial Committees. There must, we apprehend, be some elasticity in defining the suitable area—in some cases a grouping of districts, and even of counties. For, as the *Educational News* pertinently asks, "What can Kinross and Clackmannan do for higher and technical education in their position of isolation?" And the question applies still more pointedly to not a few districts. We have no doubt that Scottish opinion, as usual, will get its own way, and that the Bill will promptly get hammered into a shape alike satisfactory to the people and efficient for the purposes of education.

We quote the paragraph on private schools in the recent resolution of the Government of India outlining their educational policy. We italicize one or two of the points:

From the earliest days of British rule in India private enterprise has played a great part in the promotion of both English and vernacular education, and *every agency that could be induced to help in the work of imparting sound instruction has always been welcomed by the State.* The system of grants in aid was intended to elicit support from local resources, and to foster a spirit of initiative and combination for local ends. It is supplemented by the direct action of Government, which, speaking generally, sets the standard and undertakes work to which private effort is not equal, or for which it is not forthcoming. Thus the educational machinery now at work in India comprises not only institutions managed by Government, by District and Municipal Boards, and by Native States, but also institutions under private management, whether aided by Government or by Local Authorities or unaided. All of those which comply with certain conditions are classed as *public institutions. They number* 105,306 *in all; and over* 82,500 *are under private management.*

The progressive devolution of primary, secondary, and collegiate education upon private enterprise, and the continuous withdrawal of Government from competition therewith, was recommended by the Education Committee in 1883, and the advice has been generally acted upon. But, while accepting this policy, the Government of India at the same time recognize the extreme importance of the principle that in each branch of education Government should maintain a limited number of institutions both as models for private enterprise to follow and in order to uphold a high standard of education. In withdrawing from direct management, it is further essential that Government should retain a general control, by means of efficient inspection, over all public educational institutions.

Much might be said on this declaration of policy, but we content ourselves with pointing out the argument in favour of the largest freedom to the private schools of this country.

"The work of the college," writes the Hon. Seth Low, "is to teach that which is already known; the work of the University is, in addition to this, to inquire, to ascertain what lies beyond the line that marks the limit of the known." And this is getting to be more and more recognized nowadays. What is less vividly recognized is the immensity of the unknown, the importance of diminishing its extent, and the possibilities of knowing more. Very instructive and encouraging on this point is a lecture on "Research in State Universities," recently delivered to the Research Club of Michigan by Prof. Israel C. Russell, of Michigan University, and published in the *University Bulletin* (New Series, Vol. V., No. 5). Prof. Russell emphasizes the point "that all man has gained which makes him the superior of the beasts of the fields has come as a reward for increasing his knowledge of the cosmos in which his lot is cast." The recognition of the fact that discovery is the mainspring of progress has come forward with the development of industries, and it still needs to be inculcated even on the industrial world; but Prof. Russell takes care to affirm that "in a large view of human advancement research work in pure philosophy, from which but little direct aid to industry is perhaps furnished, must be reckoned fully as important as the discoveries of the chemist, the physicist, and others, which are widely utilized in enhancing man's material welfare." The things of the spirit are "fully as important" as the material conditions. Well, the reports of the Advisory Committees of the Carnegie Institution at Washington, though restricted largely to the United States and looking only to work supplementary to the investigations of Universities, individuals, societies, &c., sketch out plans for five years at a probable expenditure of some 30,000,000 dols., or three times the present capital of the Institution. This should open some heavy eyes with a start. Are *we* to enter for this race of "research"?

Mrs. Ogilvie Gordon, D.Sc., Ph.D., recently delivered a very practical address to the National Union of Women Workers at Glasgow, which is now available in pamphlet form (Aberdeen University Press). She addressed herself mainly to the educative advantages to be secured for girls, with a special eye to the reconstruction of Scottish education now in hand. "We wish opportunity for each individual woman," she said—"no matter in what status she is born—to develop her natural talents to the utmost of her desire, and to enter a trade or profession with her prospects of recognition and advancement limited by capacity only, not by sex"—"an open world." Well, it is no more than asked for on behalf of the other sex. "In the case of preparation for a scholastic or professional calling," she admits, "there exists an admirably constructed, consecutive plan, whereby any capable girl is launched by the educational authorities as an expert in her chosen means of livelihood," though even there the limitations are not inconsiderable; but probably Mrs. Ogilvie Gordon had specially in view teaching posts in elementary and (to some extent) secondary schools. But

the regrettable fact for us in Scotland is that an extensive field of training in the scientific and linguistic departments, as well as in special courses leading to women's handicrafts, clerkships, and appointments under Local Authorities, is attempted either inadequately in secondary and higher-grade day schools, or is not attempted at all.

Physical laboratories "are at present entirely for boys, not for girls"—"only one of the many anomalies in the present lop-sided education of our girls." "We are in Scotland urgently in want of technical and commercial day schools for girls, upon the same lines as the scientific and technical institutes in London, but with special adaptations." Mrs. Ogilvie Gordon finds "the weakest feature of our present national system of girls' education" in its fragmentary character after the girls leave the elementary schools at fourteen. The whole address is sensible, stimulating, and opportune.

The strange utterances that judges sometimes permit themselves to make, especially *de plano*, happily do not always prejudice them on the bench. Everybody that has the least notion of the urgent necessities of English law studies is looking with interest for the establishment of a real school of law, and Lord Justice Vaughan Williams, according to the newspapers, declares himself against such

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an institution and, unfortunately for him, gives his reason. That sapient reason is that "there is an antagonism between a law school and a system of law which is built partly on precedent and partly on what he could best describe as judge-made law." The distinction between precedent and judge-made law is subtle enough to have charmed Bentham and Austin; and how the antagonism operates—or can possibly operate otherwise than advantageously to the law, at all events—the Lord Justice does not explain. Moreover, he is said to have "feared that, if once we had a school of law in this country, the necessary consequence would be a code, which, he thought, would be the absolute destruction of jurisprudence and the science of law." Upon this Sir Frederick Pollock very naturally suggests the experience of the United States ("under the common law and following its methods in every point"), France, Germany (which both have codes, and yet, somehow, continue to cultivate legal science), and even England (whose commercial jurisprudence seems to thrive in spite of the codification of several important branches). One would fain hope that such views are not shared by other occupants of the judicial bench, Lords Justices or others: they are such startling contradictions of plain facts. It seems, then, that it is not schoolmasters alone that need to be delivered, by scientific and historical study, from disastrous rule of thumb.

SUMMARY OF THE MONTH.

In order "solely to relieve the consciences of those who profess to be oppressed," the Bishop of Bath and Wells suggests the establishment of "a clearing house (of the nature of a railway clearing house)" in connexion with the Board of Education.

2. To this clearing house let every County and Local Authority notify with regularity the amount of rate it is intending to levy for primary schools, specifying how much of this is required for provided or Council schools, and how much for non-provided or voluntary schools.

3. Let each ratepayer who is conscientiously opposed to paying any rate towards the support of voluntary schools be allowed (on making a declaration to this effect) to earmark his rate "for the support of provided schools only."

4. Let the amount thus earmarked be notified also to the clearing house.

5. An adjustment of the rates levied on different localities can be easily made at the clearing house; so that, however numerous might be the strained consciences in some districts, a transference of ratepayers' money not so earmarked would prevent any difficulties being experienced.

Dr. Clifford, while admitting that the plan is workable (as in the case of Roman Catholic and Protestant schools in Montreal), holds that "this is masking the difficulty rather than mastering it," and looks to a General Election for a definitive settlement.

The report of Mr. A. T. Lawrence, K.C., "that the County Council of Carmarthenshire as the Local Education Authority have failed to fulfil their duties under the Education Act of 1902 towards the forty-eight public elementary schools within their area in" the four points charged against them, has been laid on the table of the House of Commons.

The Board of Education has replied to the Cardiff Corporation, agreeing (with reservations) to the town's suggestion that its scheme under the Education Act should be similar to that of the London County Council, except that, instead of co-opting five members of the School Board, it should co-opt only three. The Board states, however, that in succeeding years the co-opted members must not necessarily be members of the School Board; for there may not then be any such members available. Finally, the Board agrees that, if its conditions are accepted by the Corporation, the intended inquiry into the failure of the Corporation to formulate a scheme shall not be held.

Sir William Anson introduced an Education (Local Authority Default) Bill (April 26) to meet the education crisis in Wales. It provides (1) that where an Education Authority is "in default" the Board of Education may make an order enabling the local managers to appoint teachers and to provide all necessaries for the school, repay the managers the money so expended, and deduct it from the Parliamentary grant to the County Council defaulting.

A conference of Education Committees of County Boroughs, non-County Boroughs, and Urban District Councils of England and Wales was held in London (April 13) for the purpose of forming an Association of Education Committees. Rules were agreed to, and it was resolved that the functions of the organization should be to watch over and protect the general interests of education as they might be affected by legislation of general application to the education districts or by the administration of the Government Departments exercising jurisdiction over education work.

A deputation from the Provisional Committee of the Education Committees of England and Wales waited upon Sir William Anson and Mr. R. L. Morant at the Board of Education (April 14) to make representations with regard to the training of teachers. It was introduced by Mr. Tudor Walters (of Leicester), the Chairman of the Conference that met the day before. The deputation urged the Board of Education to make it incumbent on Education Authorities to train pupil-teachers in numbers proportionate to the average attendance in their schools. With respect to the new regulations for the training of teachers, they asked that the old system might be continued for two years longer, so that it might run side by side with the initial efforts of the various Local Education Authorities under the new system. —Mr. Morant, on the former point, said nothing short of an Act of Parliament would suffice, and even an Act of Parliament could not produce boys and girls willing to be trained. If any practical scheme could be placed before the Board, they would be only too anxious to consider it. As it was, the Board had done all they could by means of grants to secure an increase in the supply of teachers. Mr. Walters said the deputation wanted the Board to say that each given Authority should be responsible, as far as finances were concerned, for the training of a certain number of teachers. Sir William Anson supported the views of Mr. Morant. Replying to the second representation, Mr. Morant said that it would have the Board's careful consideration, although personally he could not see that the proposed cost was altogether necessary.

The Board of Education have issued a circular to Local Education Authorities stating that they find it possible to make a considerable increase in the rates of grant in respect of pupil-teacher centres and preparatory classes fixed by the Regulations for the Instruction and Training of Pupil-Teachers, issued in July last:

The Regulations will be revised so as to provide for grants of £6 instead of £3 under Article 24, and of £4 instead of £2 under Article 25. It has been represented to the Board that the proposed new regulation, limiting admission as pupil-teachers on and after August 1, 1904, to candidates over sixteen years of age, may create a difficulty in certain localities where it is impossible to provide for the full-time instruction of intending pupil-teachers between the ages of fifteen and sixteen by so early a date as August 1 next. Where, therefore, the Board are fully satisfied that this is the case, they will be prepared to suspend the operation of the proposed new regulation until August 1, 1905; and will admit pupil-teachers between the ages of fifteen and sixteen for a three years' engagement from August 1, 1904; and pay a grant for their instruction during the first year of such engagement under Article 28 of the Regulations. Any Local Education Authority for Elementary Education desiring this special treatment for the whole or any part of their area should make an application to the Board not later than June 1, 1904.

The *Assistant Masters' Association Circular to Members* reviews the "usher's" position sixty-eight years ago.

The General Education Society, in the first year of Queen Victoria's

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reign, considered among other subjects the position of resident assistant masters in private boarding schools. At this time resident assistant masters were, for the most part, of three kinds. (1) Men receiving no salary, but doing the work and superseding the services of competent and salaried teachers. In many cases these luckless drudges had to sweep out the class-rooms and perform other menial duties. (2) Men who likewise received no salary, but were awarded a small gratuity in the course of the year, which, with their board and lodging, was considered adequate remuneration for their services. "And," says our authority, "perhaps it is, for they are worth nothing." (3) Men from twenty to thirty years of age, in receipt of from £20 to £100 a year. Of these some were preparing for the University, studying in their leisure hours and saving a little money to take them there; others were looking forward to keeping a school of their own; whilst many, "men of no character whatever," says the report, "were going on from year to year, spending all they earned and learning nothing but bad habits."

At the request of the Treasury, the following gentlemen have consented to act as a Committee to consider the allocation of the proposed increased grant to the University Colleges giving education of a University standard in arts and science:—the Right Hon. R. B. Haldane, M.P. (Chairman), Sir F. Mowatt, G.C.B., Mr. C. A. Cripps, K.C., M.P., and the Rev. Dr. Woods (late President of Trinity College, Oxford). Mr. Henry Higgs, LL.B., of the Treasury, will act as Secretary.

At the Irish National Teachers' Congress held at Belfast (April 5), Mr. J. Nealon, President, in the chair, a resolution was adopted urging upon the Chief Secretary the necessity and justice of devoting the equivalent grant due to Ireland under the Irish Development Fund Act to the purposes of primary education, as had already been done with the corresponding grant in England and Scotland, especially as Irish primary education stood more in need of assistance than did the elementary system in either of the other countries. The Congress also passed a resolution stating that the incomes of Irish teachers fell short of those paid in England and Scotland, and pointing out that this disparity necessarily caused dissatisfaction and discontent, which, in the interests of education, it would be desirable to remove. A letter was read from Mr. M'Hugh, M.P., inviting the Congress to hold its next annual meeting at Sligo, and advising the delegates to claim the allocation of a substantial sum out of the Development Fund towards increasing the pay of the teachers. Any sum so allocated, he said, must directly raise the standard of primary education in Ireland, and it should be remembered that such allocation as he suggested would in no way militate against the just demand now put forward for aid for equipment, sanitation, and heating. The letter was approved. Another resolution that was passed expressed the opinion that some means should be devised to co-ordinate the systems of education in Ireland so as to enable the children of primary schools to continue their education in secondary and technical schools, and to enable pupils of exceptional ability to pass on to either Universities or colleges of science, according to the natural bent of their minds.

Mr. Max Judge, Hon. Secretary of the Central Association of University Extension Students, writes (March 26):

During the three months that the Association has been in existence—the meeting formally creating it was held on December 21 last—136 members have joined. The Committee cannot consider this number a great one, even for this introductory stage of the campaign; but this does not represent the sum of the interest which has been aroused by the work of the Association. While indirect support is encouraging, it will become doubly so when it leads to membership. Corporate membership has already been taken advantage of, and it will be gratifying when the Association can claim as its allies the many local associations and Committees engaged in kindred work in and around London; and it is hoped that further development of the fresh interest given to University Extension will lead to co-operation between the provincial associations and those in the Metropolis.

At the first general meeting of the University of London Graduates' Association (April 18), Dr. T. B. Napier in the chair, no formal report was presented by the Council, but individual members gave a *résumé* of the various steps that have been taken to preserve the work of the University as it existed before reorganization and to keep its degrees and distinctions open to all comers on terms of equality and impartiality. There are fourteen hundred members on the roll, and Mr. W. R. Warren (2 Hare Court, Temple, E.C.) will be glad to hear from graduates in sympathy with the objects of the Association.

The demand for well qualified British schoolmistresses in South Africa is reported to be continually increasing. The Education Committee of the South African Colonization Society, having supplied large numbers of teachers to all parts of South Africa, has now entered into a formal agreement with Dr. Muir, the Superintendent of Education in Cape Colony, by which the names and qualifications of suitable candidates for educational work in Cape Colony will be published in the Government *Gazette*, and all facilities afforded for heads of schools or private employers to make their requirements known to the Society through the medium of the Education Office at Capetown. Salaries in Cape Colony in State schools and State-aided schools range from £60 to £300 per annum. Teachers are required of all grades from the elementary to the most advanced secondary types. A further opportunity of introducing English teachers to the colony has been offered by the establishment of a new secondary training college at Grahamstown. The course of instruction at this college covers from one to two years, at a cost in fees and residence of £40 per annum. Government grants of from £20 to £40 are available for all duly qualified students, such as those who have passed the Senior Oxford or Cambridge Local, the First Class College of Preceptors, the London Matriculation, or some equivalent examination, or have taken a University degree. These grants, varying according to the course taken by the student, considerably reduce even the moderate rate of expenditure mentioned above. Candidates who have done well in the training college have no difficulty in obtaining posts under the Government at the conclusion of the course.

A representative and influential committee has been formed to raise a Prof. Withers Memorial Fund, with the following objects:—(1) The placing of memorial brasses in the Owens College, Manchester, and at Borough Road College, Isleworth; (2) the establishment for a term of years of a travelling scholarship abroad for third-year students at Isleworth, and the foundation of an education library in the Owens College; (3) the provision of an annual prize or lecture in connexion with some public institution. The secretary is Mr. J. H. Gettins, University College, Reading.

A pension scheme has recently been started at Bedford Grammar School, under which assistant masters will retire at the age of sixty, and will then receive an annuity of £100 or an alternative cash payment of £1,200. In the event of a master dying or leaving the school before the age of sixty, the premiums paid will be returned to him or his representatives, together with 2½ per cent. simple interest. The premiums are paid by the Governors of the Harpur Trust, and no part thereof is either contributed by the master or deducted from his salary.

Shakespeare Week has been celebrated with unusual fervour: an address by Dr. Furnivall, followed by a performance of "Much Ado about Nothing" by Mr. Poel's Elizabethan Stage Society at Burlington House (April 22); a pilgrimage through Shakespeare's London, a lecture by Mrs. Carmichael Stopes in Gray's Inn Hall, and a commemoration dinner at the Criterion (April 23); a lecture on "The Coming of Shakespeare" by Prof. Gollancz in St. James's Hall (April 24); addresses by Dr. Richard Garnett and the Rev. R. S. de Courcy Laffan at Burlington House (April 26 and 27); and a recital by Mr. J. H. Leigh at Steinway Hall, and a *conversazione* at the Passmore Edwards Settlement, Tavistock Place, when Dr. Furnivall closed the commemoration by another address (April 29). On April 22, Mr. F. R. Benson presented a fine performance of the Oresteian Trilogy of Aischylos at Stratford-on-Avon.

For the present winter course the total number of immatriculated students at the German Universities is 37,854, of whom 3,093 are foreigners, the largest number ever recorded. The number of foreign students is equivalent to 8·2 per cent. of the total number. Of these foreigners, 739 are studying philosophy, philology, or history; 722, medicine; 651, mathematics or natural sciences; 366, law; 231, political economy or forestry; 178, agriculture; 135, Evangelical theology; 32, Catholic theology; 26, dentistry; and 13, pharmacy. 2,620 of them come from European

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and 473 from non-European countries. Among the former are 986 from Russia, 588 from Austria-Hungary, 318 from Switzerland, 162 from England, 64 from France, 49 from Holland, 41 from Turkey, and 43 from Italy. Of the other foreign students, 319 are from America, 133 from Asia (chiefly Japanese), 19 from Africa, and 2 from Australia. These figures, however, include only the regularly immatriculated students; to them must be added those that are enrolled as hospitants, but whose number is not given.

A CANADIAN correspondent (official) writes: "Canada's recent progress in material prosperity finds its counterpart in the record of her intellectual development during the period since confederation. This is the direct outcome of the educational system on which Canadians set such store, whose foundations were laid broad and deep in the early fifties, anticipating by some twenty years Mr. Forster's Act. At no period has literary ability been more abundant in the Dominion than at the present time, and Canadian writers and poets are rapidly building up a distinctively national literature marked by high achievement and much promise. The general pride which Canadians take in this movement is reflected in the discussions that have been going on among the school teachers' associations in Ontario in regard to the advisability of introducing Canadian poetry and literature into schools as supplementary subjects. A committee has reported favourably on the suggestion, recommending that the English-speaking schools should be supplied with copies of the works of Lampman and Roberts. In the opinion of Howells, Archibald Lampman the poet, who died two years ago, ranks with the strongest singers the New World has produced; and his work has won the highest praise in the mother country. Charles George Douglas Roberts, born in 1860, poet, story writer, and historian, is the acknowledged leader of the Canadian school of writers of to-day, and in the opinion of Mr. Goldwin Smith he is a master of English prose. Both these authors were born in Canada."

PRINCIPAL CHILDS, speaking recently at a social gathering of head teachers at University College, Reading on the future of education, said:

They would have to watch this massive fabric of organization, whether amongst themselves or elsewhere, to see that the ultimate end was not lost sight of in the clamour of tongues, and that the promise of this great movement should not be lost in the strife of parties of one set of teachers against another. They wanted to have among the teachers more sense of unity and more comradeship. They ought not to be divided into camps to the extent they had been divided in the past. They did not want to have one set of teachers called elementary, another secondary, and a third a kind of nondescript like himself. They ought to feel that they all belonged to the same profession and had the same great cause at heart. They, as teachers, had to try and increase the value of learning and scholarship in the public opinion of England. They wanted the public to pay as much respect to the man who taught, and to the man who acquired knowledge, as was paid to the man who acquired wealth or military glory. He concluded by urging the increasing importance of training their pupils in the duties and responsibilities of citizenship.

WE record with much regret the death of Sir Edwin Arnold, K.C.I.E. Sir Edwin was educated at King's School, Rochester, King's College, London, and University College, Oxford. In 1852 he gained the Newdigate Prize for his English poem on "The Feast of Belshazzar," and in 1853 he was selected to address the Earl of Derby on his installation as Chancellor of the University. Leaving Oxford with high honours, he was elected Second Master in the English Division of King Edward VI.'s School at Birmingham, and later he was appointed Principal of the Government Sanskrit College at Poona, and Fellow of the Bombay University. For more than forty years he had been a prominent member of the staff of the *Daily Telegraph*. His literary work included a volume on education in India, and a history of the administration of Lord Dalhousie; but his fame will rest on his poems, and especially on his epics—"The Light of Asia" and "The Light of the World." Sir Edwin was also an ardent sportsman and traveller.

DR. SAMUEL SMILES, the biographer of great captains of industry, the herald of "self-help," and himself a notable example of the virtue of perseverance, died in his ninety-second year.

UNIVERSITIES.

(*From our own Correspondent.*)

London. THE Senate has approved courses of study and examinations for degrees in Veterinary Science for internal and external students. The courses of study are, for the first year: Physics, Chemistry, Elementary Biology, and the Anatomy of the Domesticated Animals; second year: Anatomy, Biology, and Elementary Physiology; third year: Physiology, Elementary Pathology, and Elementary Hygiene; fourth year: Pathology and Hygiene. The examinations are, in the first year: Physics and Chemistry (up to the Preliminary Scientific standard); second year: Anatomy (Advanced) and Biology (up to the Preliminary Scientific standard); third year: Physiology (Degree standard); fourth year: Pathology and Hygiene (Degree standard). It is provided that the Examination in Physiology may, at the choice of the candidate, be postponed till the end of the fourth year, when it and the Examination in Pathology and Hygiene may be taken together.

Glasgow. THE total revenue of the University for the year from all sources, including foundations, amounted to nearly £75,000; and the expenditure on the general University account has exceeded the revenue on that account by £1,820. The University has now command of a revenue which is greater by nearly £8,800 than that of eight years ago, and £2,700 over that of the previous session. Of the latter figure £1,000 arises from increase of revenue on investments, and £1,700 from fees of students.

The late Prof. Young is to be commemorated by a bronze medallion placed in the Hunterian Museum, and by the issue of a volume of his scientific papers, &c.——Some £700 has been subscribed for a memorial to the late Prof. Hastie, but the form of commemoration is not yet settled.

An annual Commemoration Day was inaugurated (April 19). After a religious service Sir William Ramsay delivered a discourse on "Dr. Joseph Black," describing his various discoveries (especially those connected with carbonic acid gas, magnesia, caustic alkali, and fixed air), and his experiments for the determination of the latent heat of steam, which were utilized by his friend James Watt and developed by later men of science until they formed the very groundwork of the sister sciences, physics and chemistry. At the Commemoration banquet in the evening, Mr. Choate, the United States Ambassador, spoke eloquently on the influence of Universities on national policy.

Wales. AT a meeting of the Guild of Graduates of the University of Wales held at University College, Aberystwyth (April 7), the Warden (Mr. T. Marchant Williams) presiding, the recommendation of the Standing Committee that the publication of a Welsh dictionary be undertaken by the Guild was agreed to, and a committee was appointed to deal with the matter. The Warden said that the Guild had contemplated completing the Welsh dictionary of the late Chancellor Silvan Evans, but there were difficulties in the way. They had at their command, if they asked for it, £250 or £300, and he did not think there would be any difficulty in getting £400 from the Treasury to carry out the work. Dr. Williams, medical officer of health for Glamorganshire, delivered a lecture on the sanitary control of schools, in which he advocated systematic inspection of schools as to sanitary arrangements and periodical inspection by a school medical adviser, and suggested that the head teacher should be able to diagnose the cardinal symptoms of disease. Principal Reichel, of Bangor, gave an address on prominent features of the American Universities.

At a meeting of the Court of Governors of University College, Aberystwith (March 25), Principal Roberts reported that it had been decided to acquire for £2,500 Buarth Hill (ten minutes' walk from the present college buildings), primarily as the site of the Edward Davies Memorial Laboratories. They were indebted to Mr. Colby for generous terms of purchase of the land. With this and the Gwgythian land already secured through the generosity of the President of the college (Lord Rendel), they now had enough ground for the necessary present and prospective extensions of the college. Six of the seven counties associated with the college had already, through their Councils, supported the claims of the college library to be considered the national library of Wales, and the matter was still being pressed forward. On the motion of Sir John Williams,

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who presided, a resolution was passed instructing the college Council to join with the sister colleges of the University of Wales in renewed efforts to obtain further financial assistance from the Government.

Manchester. The Examination for the Secondary Teachers' Diploma will be held in June, not (as in previous years) in July.

Leeds. Already nearly half the £100,000 required for the establishment of the University has been raised; and a Committee is actively engaged in finding the other half.

Sheffield. The Chairman, Treasurer, and Hon. Secretaries of the Sheffield University Fund have issued a further appeal for financial help. They point out that a University Charter is practically promised, on condition that a sum of £170,000 is obtained—so that now subscribers will know that the object to which they are subscribing is capable of realization. The subscription list stands at about £104,000; £66,000 has therefore still to be raised.

CURRENT EVENTS.

Fixtures. At the Members' Monthly Meeting of the College of Preceptors, to take place on May 18, there will be a practical demonstration of methods of teaching modern foreign languages. Mr. W. C. Brown will take a class of beginners in colloquial German, and Mr. R. J. Shanklin will give a lesson to a class on French reading. The demonstrations will be followed by discussion.

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During the current term at University College, London, the following new courses will be running on Thursdays:—(1) On Idealistic Ethics (introduction), by Prof. Dawes Hicks, at 5 p.m.; (2) on the History of Modern Philosophy (Descartes to Kant), by Mr. A. Wolf, at 4 p.m.; (3) on International Law, by Prof. Sir John Macdonell, at 5 p.m.; (4) on Social Evolution in Oceania, by Dr. Haddon (Cambridge), at 4.30 p.m.; and, on Fridays, (5) a course on the History of Architectural Development, by Prof. F. M. Simpson, at 11 a.m.

* * *

Prof. Bonney will deliver during May, at University College, London, two University lectures in Advanced Geology: "Lessons from Geological Mistakes—(1) about Rocks, (2) about Ice Action."

* * *

The Eighth Annual Conference of the Parents' National Educational Union will be held in the Royal Arch Halls, Edinburgh, on May 27–31.

* * *

The University of London is arranging, in co-operation with the Teachers' Guild, a Holiday Course for Foreigners, to be held in London, July 18 to August 12. It will consist of (1) classes for conversation, elementary and advanced; (2) classes in composition, &c., advanced; (3) lectures and short courses on (*a*) English Literature and Language, (*b*) English Education, (*c*) the Universities of England, and (*d*) English Institutions. Excursions. Apply to the Director of the Holiday Course for Foreigners, University of London, South Kensington, S.W.

Honours. Sir Richard Jebb, M.P., Regius Professor of Greek in the University of Cambridge, has been elected an honorary member of the American Philosophical Society.

* * *

Lord Kelvin has been appointed Chancellor of the University of Glasgow.

Sir Richard Solomon, K.C., C.B., K.C.M.G., Legal Adviser to the Transvaal Government, has been elected an honorary Fellow of Peterhouse, Cambridge.

* * *

The jubilee of Sir Henry Roscoe's graduation at Heidelberg was celebrated (April 22) at Manchester University, Sir Henry having been a prominent figure in University teaching in Manchester from 1856 to 1886. Congratulatory addresses were presented from the Universities of Heidelberg, Cambridge, London, Manchester, Liverpool, Birmingham, the Scotch and Welsh Universities, University College (London), University of Montreal, the Colleges of Leeds, Sheffield, Newcastle, and Dundee, the Royal Society, and the British Association.

Endowments and Benefactions. Major-General Roche Forlong, Edinburgh, has bequeathed £5,000 towards the establishment of an Imperial Oriental College or School for the Study of Oriental Languages. In the event of no decided steps being taken within five years of his death, the money is to be handed over to the Royal Asiatic Society of London in trust for the general advancement of Oriental learning.

* * *

An Archibald Forbes Memorial Medal in History has been founded in the University of Aberdeen.

* * *

The late Mr. John Forbes, K.C., bequeathed £10,000 to the University of Aberdeen—contingently.

* * *

Ruskin College, Oxford, still wants some £10,000 for the erection and furnishing of new buildings, and the appeal is a most deserving one.

Two friends have given £1,000 each. The Amalgamated Society of Engineers, numbering 72,000 working-men, have made two levies of 1d. each, resulting in £600; the London Society of Compositors, numbering 11,000, have subscribed £30; the British Steel Smelters, Mill and Tinplate Workers' Association, numbering 10,000, have contributed £250; the Scottish Co-operative Wholesale Society have sent £50; these, with other smaller sums, amount to nearly £3,000.

* * *

The Twentieth Century Fund of one million guineas for the extension of Wesleyan Methodist Church work has been allocated thus:—£300,000 to the erection and enlargement of chapels, Sunday schools, manses, soldiers' and sailors' homes, &c.; £200,000 to educational work; £100,000 to foreign missions; £100,000 to home missions and temperance work; £50,000 to the Children's Home; £250,000 to a Central Hall in London.

Scholarships and Prizes. Seven Cambridge colleges will hold a combined examination for sixty-three entrance scholarships and various exhibitions on December 6 and following days. Pembroke offers two scholarships of £80, three of £60, and four of £40. Gonville and Caius: two scholarships of £80, three of £60, and five of £40. King's: two scholarships of £80, three of £60, three exhibitions of £40, and five Eton foundation scholarships. Jesus: two scholarships of £80, two of £60, and four of £40. Christ's: one scholarship of £80, three of £60, and three of £40. St. John's: three scholarships of £80, five of £60, and three of £40. Emmanuel: one scholarship of £80, three of £60, and four of £40, and two sub-sizarships. Candidates must be under 19 on October 1. Detailed information and application forms from the Masters of Gonville and Caius and of Emmanuel, Mr. W. S. Hadley (Pembroke), Mr. W. H. Macaulay (King's), Mr. A. Gray (Jesus), Rev. J. W. Cartmell (Christ's), and Dr. D. MacAlister (St. John's).

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TRINITY COLLEGE, Cambridge, offers two exhibitions (£50, £30) to candidates selected at the open competitive examination for the Indian Civil Service in August next. Apply by letter to the Senior Tutor before September 1.

* * *

A SCHOLARSHIP of £25 a year for two years will be offered by the Society of Oxford Home Students in March, 1905, open to candidates requiring pecuniary aid, either being Oxford Home students of not more than two terms' standing or intending to become Oxford Home students.

* * *

IT is proposed to found at Oxford a scholarship for the advancement of Oriental study in commemoration of the late Sir Edwin Arnold.

* * *

THE Manchester Education Committee increases its scholarship scheme from £3,670 to somewhere between £8,000 and £9,000, with a view to improving the educational ladder.

Appointments and Vacancies.

THE REV. STUART A. DONALDSON, M.A., assistant master at Eton (since 1878), has been appointed Master of Magdalene College, Cambridge.

* * *

DR. J. A. EWING, Director of Naval Education, sometime Professor of Mechanism and Applied Mechanics in the University of Cambridge, has been appointed Rede Lecturer for the present year.

* * *

DR. HENRY H. DIXON, who has been assistant to Prof. Wright since 1892, succeeds him as Professor of Botany in Trinity College, Dublin.

* * *

THE REV. PROF. LAIDLAW, D.D., has intimated his intention of resigning the Chair of Systematic Theology in the New College, Edinburgh, which he has held since 1881.

* * *

AT Manchester University, Mr. Siegmund Moritz, M.D. (Würzburg), M.R.C.P. (Lond.), has been appointed Lecturer on Diseases of the Larynx; Mr. William Woods, F.R.C.V.S., to be Lecturer on Veterinary Hygiene; and Mr. H. Thiselton Mark, B.A., B.Sc., Master of Method in the Day Training College, to be University Lecturer in Education.

* * *

SIR HENRY CRAIK, K.C.B., LL.D., will shortly retire from the Secretaryship of the Scottish Education Department, after nineteen years' service. The Department is to be permanently represented in Edinburgh.

* * *

THE Board of Education has appointed, as Staff Inspectors of Secondary Schools, Mr. J. W. Headlam, M.A., King's College, Cambridge; Dr. R. P. Scott, M.A., LL.D., Head Master of Parmiter's School, London; and Dr. Frederick Spencer, M.A., LL.D., Rector of the High School, Glasgow.

* * *

MR. HORACE E. MANN, M.A., Secretary to the Academic Registrar, London University, has been appointed a Junior Examiner under the Board of Education.

* * *

THE REV. P. CARNEGIE SIMPSON, M.A., United Free Church, Renfield, Glasgow, has been appointed Principal of the Presbyterian College, Montreal.

* * *

THE REV. W. E. BLOMFIELD, B.A., B.D., pastor of Queen's Road Chapel, Coventry, has been appointed Principal of Rawdon Baptist College, Leeds.

* * *

MR. PERCY LONGMUIR, of University College, Sheffield, has been appointed junior assistant in the Metallurgical Department of the National Physical Laboratory.

* * *

MR. JOHN MACLENNAN, M.A., Rector of Elgin Academy, has been appointed Rector and classical master of Dundee High School.

* * *

MR. O. F. KIRBY, M.A., science master at Elgin Academy, has been appointed a chemistry master in the Leeds Boys' Modern School in connexion with the Leeds Institute of Science, Art, and Literature.

* * *

MISS PHILLIMORE, Head Mistress of the York High School of the Girls' Public Day School Company, has been appointed Head Mistress of the Brighton and Hove High School, in succession to Miss Mayhew; and

MISS C. L. PRIMROSE, assistant mistress in the Dulwich High School, has been appointed Head Mistress of the York High School.

Literary Items.

THE Clarendon Press will issue in autumn the first of two volumes of selections from the minor poetry of the times of Charles I. and Charles II., prepared by Prof. Saintsbury, who furnishes a general introduction. Each group of poems will have its necessary introduction and notes. Many of the minor poets are of historical as well as literary interest, and editions of their works are mostly scarce.

* * *

MR. FROWDE will presently publish an edition of More's "Utopia," with introduction and notes, philological, historical, and philosophical, by Mr. J. Churton Collins, M.A.

* * *

MESSRS. METHUEN will issue shortly, in their "Standard Library," a three-volume edition of Carlyle's "Life and Letters of Oliver Cromwell." The introduction is by Mr. C. H. Firth, and notes and appendices by Mrs. S. C. Lomas.

* * *

THE next two volumes in the thin-paper reissue of Mr. Fisher Unwin's "Mermaid Series" will be "The Best Plays of Beaumont and Fletcher," with introduction and notes by Mr. J. St. Loe Strachey.

* * *

MR. FISHER UNWIN is publishing a new volume by Mrs. Brightwen—"Quiet Hours with Nature"; and a timely book by Miss Augusta M. Campbell Davidson on "Present-Day Japan."

* * *

MESSRS. CONSTABLE promise an English edition of an important work by M. Alexandre Ular, an accomplished sinologist, entitled "A Russo-Chinese Empire," based on a prolonged study of facts on the spot.

* * *

A NEW edition of the late Prof. Bain's "Higher English Grammar" is in the press. The chapter on the growth of the language has been largely rewritten by Mr. Alexander Mackie, M.A., in accordance with latest lights in philology.

* * *

THE interest in the approaching publication of Lord Acton's lectures and essays is whetted by Mr. John Pollock's charming article on "Lord Acton at Cambridge" in the *Independent Review* for April—an eulogistic sketch that will accentuate the puzzlement of outsiders over Lord Acton's esoteric reputation.

* * *

MESSRS. WILLIAMS & NORGATE'S *International Book Circular*, No. 138, is a "Herbert Spencer number," with an appreciation of Spencer's work by Mr. W. H. Hudson (late a private secretary to the philosopher) and a recent portrait.

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THE important series of Manuals and Class-books in Oriental languages (over a hundred volumes) formerly published by Messrs. W. H. Allen & Co., and in more recent years by Messrs. Sampson Low, Marston, & Co., have now been acquired or taken over by Messrs. Crosby Lockwood & Son.

* * *

THE *Commercial College Chronicle*, edited by Dr. A. L. Stange, Munich (10s. a year, Williams & Norgate), which made its first monthly appearance in English in January, is an international review containing information about the principal Universities and commercial colleges of Europe and America. The February number gives a pretty full description of the London School of Economics and Political Science.

General.

MESSRS. JOHN BROADWOOD & SONS have devised "a scheme by which any school authority can obtain the best possible instruments" for use in elementary and secondary schools "on terms which practically relieve the ratepayers of everything but a nominal cost."

* * *

ARRANGEMENTS are practically concluded whereby Principal Owen Williams, of the New Veterinary College, Edinburgh, and President of the Royal College of Veterinary Surgeons, will go to Liverpool as the Head of a new Faculty of Veterinary Medicine in connexion with the University of that city and with the School of Tropical Medicine. This virtually means the transfer of the New Veterinary College from Edinburgh to Liverpool.

* * *

AT the City of London College a presentation was made (April 23) to Dr. Cusack, in celebration of the twenty-fifth anniversary of the founding of the institution, which trains pupil-teachers for King's Scholarships and Certificate Examinations. Mr. Graves, in making the presentation, mentioned that when Dr. Cusack started, twenty-five years ago, he had only five pupils: and now he has over five thousand.

* * *

A MEMORIAL BUST of the late Marquis of Bute in the robes of the Lord Rector of the University of St. Andrews, by Mr. Pittendreigh Gillivray, R.S.A., was unveiled (March 28) in the vestibule of the Bute Medical Buildings, St. Andrews.

* * *

MULGRAVE CASTLE SCHOOL, near Whitby, which has been conducted for the past dozen years by the Marquis of Normanby, Canon of Windsor, has been closed (April 5).

* * *

A REUTER TELEGRAM from Montreal says: "The Board of Trade has decided to take steps to second the proposal of the London Chamber of Commerce to organize tours throughout Canada for English University graduates, as moved at the Congress of Chambers of Commerce held here last summer."

MANUAL TRAINING.

ITS PSYCHOLOGICAL IMPORTANCE.

IN a recent address on the psychological importance of manual training, Sir John A. Cockburn, M.D., K.C.M.G., said:

It is the high mission of manual training teachers to remove the common reproach that the school does not prepare for real life, and that dull boys at school are often found to make the most capable men. Education must of necessity be for the future; cannot afford to indulge in idolatry of the past; but, until recently, the dead hand of the Middle Ages has been heavy on the young life of the school. In a progressive age adjustment is necessary to prevent dislocation between the preparation for living and the actual requirements of life. In our own times construction is the key-note which rings through all activity, even up to the organization of Empire. Everywhere is manifest the need of interdependence and increased relationship. Manual training is therefore specially appropriate; for it is pre-eminent in developing constructive ability and the faculty of keeping in touch with environment. Twenty years ago manual training was advocated chiefly to develop dexterity of the hand and to predispose to useful callings. It does all this and much more. The pioneers builded better than they knew. It is now recognized that the hand is one of the best channels to the intelligence, and that in training the hand we minister most effectually to the requirements of intellectual and moral as well as of physical development. Rousseau recognized this when he wrote: "If instead of chaining a child to his books I occupy him in a workshop, his hands labour to the profit of his spirit: he becomes a philosopher, though he thinks he is only a workman." Time in giving intellectual studies would be saved if half the school hours were spent in the workshop. Even literature is imperfectly apprehended by those whose knowledge is confined to books. Every language teems with innumerable metaphors derived from manual processes and such expressions as "weld," "clinch," "against the grain" are tame at second hand. In a recent review of Herbert Spencer's works the strength and aptness of his style were attributed to his practical training as an engineer. Pupils detect their errors in actual work more readily than in abstract processes, and learn to despise inaccuracy and slovenliness. Nothing so clearly demonstrates the difference between right and wrong as manual training. A lie in wood stands self-exposed. Volition springs from muscular movement, actual or ideal, and the will consists largely in a firm control of the muscles. Moreover, attention is at root a muscular process: the constructive imagination is strengthened and invention is stimulated by manual work. The tendency of thought to inhibit action is thereby connected, and the blessing of an active temperament secured. It is well known that the prizes of life fall to men of action. Psychologists are agreed that by the sheer force of its value in developing the mind manual training must take definite rank as an indispensable element in all primary and secondary schools which have any claim to efficiency. It is a necessity for general culture. . . . Montaigne says: "For it is not a mind, it is not a body, that we erect; but it is a man, and we must not make two parts of him"; and Milton protested that the dictum of separation was at variance with both Nature and reason. Like every true reform, manual training is a harking back to old principles, and here, as elsewhere, we must go to ancient Greece for up-to-date wisdom. Empedocles (450 B.C.) called the hand the best highway of persuasion into the mind of man.

THE SCOTTISH EDUCATION BILL.

VIEWS OF THE SECONDARY TEACHERS.

THE Association of Teachers in the Secondary Schools of Scotland, in a memorandum addressed to the Secretary for Scotland by the General Committee, records its high appreciation of the service which has been rendered to education in Scotland by the Government, and especially by the Secretary for Scotland, in framing the Education Bill. With the principles and main provisions of the Bill the Committee is in hearty agreement. In particular it welcomes the proposal to establish Provincial Councils for education. It believes that such Provincial Councils—or better still, one National Council—will contribute in a very marked degree to the development of a truly national system of education in Scotland. There are, nevertheless, in the opinion of the Committee, some respects in which the Bill may by amendment be improved, and to the following suggested amendments the attention of the Secretary for Scotland is directed:—

In Part I.—Constitution and Election of School Board—it is suggested that the new Authority should be called the "School Council." It seems desirable to mark the greatly extended scope of the functions of the new governing body by assimilating its name to that of the other local governing bodies.

In Part II.—Powers of School Board—it is suggested in Section 2 (), line 41, that after "school" should be inserted "other than secondary or technical schools." To entrust such schools to the local managers designated in the Bill would be injurious to the interests of these schools, and inconsistent with their position as schools serving the educational needs of the whole district. Also a sub-section should be added to this effect: "In the case of secondary or technical schools in education districts other than the enumerated districts, it shall be lawful for the School Board to delegate such of their powers in connexion with the management of such school as they may see fit to managers appointed by them. In Section 21, line 26, after "schools," "other than secondary or technical schools" should be added. In Section 25 (1)—"But in the case of loans contracted for the purpose of providing secondary or technical schools, the burdens thus created shall be transferred to the School Board of the district in which such secondary or technical school is situated" should be added. It must be remembered that such schools usually supply a district, and that hitherto the parishes surrounding the burghs in which they are situated have borne none of the expense thereby entailed. In Section 30, after "play ground," "or recreation ground" should be added. It is very important that School Boards shall have power to provide and maintain playing fields and their appurtenances. In Section 31 (3), it should be made clear that, among the conditions on which such grants may so be made, there

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should be included the right of the School Board to demand representation on the governing body of the school to which the grant is made. Section 31 (6) should read: "In paying pension and retiring allowances to teachers in their employment, (*a*) in secondary and technical schools, and (*b*) as in the sub-section." A very large proportion of the teachers in secondary and technical schools are not certificated. Their existing customary rights to pensions should be safeguarded. Section 32, line 11, should read: "or of appointing, promoting, or dismissing teachers."

In Part III.—Education (Scotland) Fund—Section 39 should read: "That all moneys granted to schools in an education district under this section should be allocated by the School Board, except in the case of the central institutions referred to in Sub-Section 3 (*a*)." Unless such a method of distribution be adopted, it will not be possible for the School Board to effectively correlate all the education, elementary, secondary, and technical, within its district. As to Section 39 (4), this mode of distribution of money is unsatisfactory, inasmuch as the fluctuation of income may injuriously affect the administration of the schools. The following remarks are added:—Page 17, line 11: That if page 18. lines 26–32, is the definition of "higher education" promised, it is not sufficiently definite. Page 17, line 21, read: "in schools which come under this Act."

As to Part IV.—Provincial Councils for Education—the memorandum says: "While this Association welcomes the proposal to establish Provincial Councils, it is convinced that a single National Council would be much more effective. That on this National Council or on the Provincial Councils the teaching profession should be more largely represented than is proposed in the Bill, and that this Association, as representing the secondary teachers of Scotland, should have representation. That the University representation is excessive, more especially as the Universities are not dealt with in the Bill. That the National Council or the Provincial Councils should be consulted in the framing of all codes, minutes, or circulars."

COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on April 23. Present: Dr. Wormell, Vice-President, in the Chair; Mr. Butler, Prof. Adams, Mr. Armitage Smith, Mr. Barlet, Mr. Baumann, Rev. J. B. Blomfield, Miss Crookshank, Mr. Easterbrook, Mr. Eve, Mr. Holland, Mr. Kelland, Mr. Millar Inglis, Mr. Pinches, Miss Punnett, Mr. Rule, Rev. Dr. Scott, Mr. Storr, and Rev. J. Twentyman.

The minutes of the last meeting were read and confirmed.

The diploma of Associate was granted to Mr. James Denton, who had passed the required examination.

The Report of the Examination Committee was adopted.

The Report of the Finance Committee was adopted.

Mr. A. P. Starbuck, B.A., St. John's College, Green Lanes, N., was elected a member of the Council, in the place of Mr. W. H. Harris, resigned.

The following persons were elected members of the College:—

Mr. W. J. Andrews, L.C.P., 58 Pasley Street East, Stoke, Devonport.
Miss M. E. Bailey, A.C.P., Clifton Lodge School, Fleetwood.
Miss M. M. Batterbury, A.C.P., Wellington College, Hastings.
Mr. J. Birch, A.C.P., Clifton, Newlyn, Penzance.
Mr. P. S. R. Bridge, M.A. Oxon, L.C.P., Rosary Cottage, Old Hall, Ware.
Mr. A. E. E. Cook, B.A. Lond., A.C.P., Editha, Linden Gardens, Leatherhead.
Mr. A. Haysman, A.C.P., 329 Finchley Road, Hampstead, N.W.
Miss E. Keen, A.C.P., Fairfield House, East Dereham, Norfolk.
Rev. J. J. Milne, M.A. Camb., Glengarry, Lee-on-the-Solent, Hants.
Mr. S. Slefrig, B.Sc. Victoria, A.C.P., Grammar School, Gillingham, Dorset.
Miss. E. M. Smith, A.C.P., c.o. Miss Yates, Bryntirion, Shrewsbury.
Miss G. E. Stalley, L.C.P., Central Foundation School, Spital Square, E.
Mr. J. A. S. Wilson, M.A. Edin., L.C.P., 88 Leander Road, Brixton, S.W.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHOR.—De Saint Joseph's Cien Lecturas y Conversaciones selectas de Autores modernos franceses, and Curso completo de Idioma Inglés.

By A. & C. BLACK.—Black's Elementary Geography Reader No. VB. (Asia); History in Biography, Vol. I.; "Sir Walter Scott" Continuous Reader (Rob Roy); Finnemore's Social Life in England, Vol. II.; Herbertson's Descriptive Geography from Original Sources (Australia and Oceania); Kirkman's Frazer's Contes des Chevaliers, and Ninet's Trois Récits de Froissart.

By W. B. CLIVE.—Watt's Selections from Bacon's Essays.

By G. BELL & SONS.—Scott's Woodstock (Bell's Reading Books).

By HACHETTE & Co.—Duchemin's De Musset's On ne badine pas avec l'Amour; Smith's English Colloquialisms with their French Equivalents.

By MACMILLAN & Co., LTD.—Notes to Palgrave's Golden Treasury of Songs and Lyrics; Jennings's English Poems, Parts I. and II.

By RELFE BROS., LTD.—Perry's Local Examination Physiography.

Supplement to R.U.I. Calendar for 1904.

Medical and Dentists' Registers, 1904.

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HOW TO BE INTERESTING IN TEACHING.

Address by Professor Adams.

At the Evening Meeting of the members of the College of Preceptors on April 20, Mr. H. C. Bowen in the Chair, Prof. Adams, of the University of London, read the following paper:—

Nature has seen to it that certain things shall immediately and invariably excite our interest. Loud sounds, bright colours, pungent odours, all attract our attention without any effort. These are sometimes called "grosser interests," because they appeal to the self in a very marked way. Anything connected with our appetites interests us whether we will or no. This, after all, is not a matter for which we should feel called upon to apologize. It is Nature's provision to ensure that we shall attend to certain matters that she knows to be of primary importance to our well-being. Further, it must not be forgotten that it is impossible for us ever to get beyond this self-reference in interest. From its very nature, all interest is self-referent, however altruistic the interested person may be. To say that I am interested in a thing is only another way of saying that that thing in some way or other *affects* me. Even etymologically the word means a state of affairs in which one thing affects another, in which some thing matters to another. The first step then in arousing a person's interest in any matter is to bring that matter into relation with the person.

When we say that a highly coloured sweetmeat is more interesting to a child than is a spelling book, we discriminate between an interest that is caused by a provision of Nature and one that, where it exists at all, is the result of deliberate effort on the part of somebody, though the success of this effort depends ultimately upon a state of things for which Nature is responsible. Obviously we can never get beyond Nature. It is because a boy is what he is that he is interested in plum-pudding, and it is for precisely the same reason that he is interested in postage stamps. The fact that the latter interest is of later development and implies certain external stimulants, in no way alters the fact that each interest is aroused by bringing into contact with the boy-*ego* certain things for which that *ego* has a more or less direct affinity.

The degree of directness with which matters appeal to the *ego* introduces difficulties in the way of cultivating certain interests as compared with others. But the process of forming the connexion is the same in all cases. When we say that cricket is more interesting to a boy than is Latin we are not talking quite accurately. What we mean is that it is more easy to rouse interest in the game than in the language. As a matter of fact, many boys are equally interested in both, while there is a minority that actually have more interest in Latin.

When we hear, as we sometimes do, that it is impossible to arouse the interest of certain people in certain subjects, all that we are called upon to believe is that immediate interest cannot be aroused in a given subject at a given stage. Sir George Stokes, of Cambridge, gave, on one occasion, a course of six lectures on Light, in the University of Aberdeen. The first lecture was attended by a few hundreds, the last by a few units. It was found impossible to interest the audience because the learned lecturer was enunciating original views that demanded an amount of previous knowledge that his audience did not possess. If Sir George's purpose had been to interest a large audience, he would have begun with the elements of his subject and worked gradually upwards. In other words, he would have respected the self-referent impulses of his hearers.

Start from the Pupil's Point of View.

The first principle, then, in seeking to make our teaching interesting is to start in every case from the pupil's point of view. I have no doubt Sir G. Stokes would have been very indignant if he had been asked to adopt the point of view of the plain man. But it was not essential that he should be interesting to all. To the teacher it is of the first importance; for, if the pupil is

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not interested *in his work*, nothing else really matters. It goes without saying that the words on which I have laid stress in the last sentence are of the essence of the matter. It is not difficult to arouse the interest of the pupils in matters outside their work. Teachers can easily become interesting by telling funny stories, or by making flamboyant but uninstructive experiments; but, unless the interest is in the work as such, it is worse than useless. It is a force against, not for, the teacher's true aims.

In dealing with the pupil's point of view, let us consider the social bore and learn of him. Why is he a bore? Is it not because he persists in speaking of things that interest himself, whether they happen to interest others or not? Whatever remark you make, he replies in terms of his own experience and with no reference to yours. Mrs. Hugh Bell has a very clever little book on "Conversational Openings," in which the beginnings of society conversations are treated as the openings of games are in the chess text-books. Each conversation is treated as a game, in which victory is secured by the person who can direct the talk to subjects in which he is interested. In society a man may legitimately fight the battle of his interests for his own enjoyment; but, after all, it has to be remembered that what is success to the victor is boredom to the vanquished. Mrs. Bell's successful conversationalist is, by the very conditions of the case, a triumphant bore.

Don't be a Bore.

In school we not only may—we must—fight for our interests. I wonder if it is too hard a saying that many teachers gain their victory at the same expense as the social conqueror. Is it not true that we are all tempted to secure an easy victory for our subjects, and thus become bores to our helpless pupils? Our position is not exactly that of the bore in society. If he desires to be a pleasant person, all he has to do is to sacrifice the subjects in which he is interested and talk of what the other person is eager about. This is only changing the incidence of boredom, and, if that were all, the teacher might very naturally be called upon to make the necessary sacrifice. But the subjects in school are parts of the condition of the problem. These subjects must be the staple of conversation; and yet the pupils are not to be bored. It is the teacher's business to seek about till he finds some point of connexion between the present content of the pupil's mind and the matter he wishes to teach. However remote this connexion may be, it must be used, as there is no other way in which the new matter can be really assimilated with the old. To be interesting, from this point of view, is equivalent to being able to teach at all. How can I get the pupil to regard the matter I want to teach him? is the first question that the teacher must face before he even begins to teach. Only by adopting the point of view of the pupil can the teacher lead the pupil to deal successfully with any subject.

Find the nearest Point of Contact.

Naturally, the wise teacher will seek the nearest point of contact between the present content of the pupil's mind and the matter about to be introduced. Further, he will select a point of contact that involves a real causal relation with the essential points of the subject in hand. There are probably many mere extrinsic links of connexion between the pupil's present knowledge and the subjects to be taught, but these must give way to matters that form an integral part of the system of things with which the subject is connected.

Relate New Facts with the Pupil's Old Facts.

Hence arises the second principle in the art of being interesting. Not only must we approach the subject from the pupil's point of view, but we must prepare a place for the new fact among the facts already within the pupil's knowledge. When young teachers are asked how they propose to interest their pupils they give two distinct kinds of answer. The more commonplace students say that to keep a class interested it is necessary to keep on supplying new facts; give them something fresh every lesson, and there will be no lack of interest. More thoughtful students go a step further back, and say that a class is never so much interested as when dealing with things that are familiar. Each answer contains enough truth to save it from being altogether condemned, but neither can stand by itself; not the entirely new nor the altogether familiar is interesting. No doubt we have intellectual Athens, whose citizens "spent their time in nothing else but either to tell or to hear some new thing." On the other hand, we are all familiar with the person who has no sympathy with anything that is not familiar to him —"The old is pleasant to the old."

But an absolutely new thing has no interest for us. Indeed, the very word "absolutely" shows this. We can have no relation with it whatever if it be absolutely new; for, if we do find that we have some means of relating the new fact to our past experience, it is clearly not absolutely new. Suppose I utter four words that are unfamiliar to you: they will fall naturally into different classes, according to the way in which you seek to bring them into relation with your present knowledge. Take the words "aprosexia," "grangerise," "cheeselep," "lazy-tongs." The first word you probably do not know, and, indeed, find it difficult to separate the sounds of which it is made up; the second either conveys its meaning at once from previous knowledge or passes through the mind without leaving any trace whatever; the third probably suggests something about a dairy or cookery or larders, though there is nothing definite about the meaning; the fourth either calls up a perfect picture of the instrument or it raises a problem of which two of the terms are familiar, but related to one another in a way that is obscure.

These words probably have roused a certain amount of interest in your minds as they have been used here; but this interest does not lie in the words themselves, but in the connexion in which they are used. Isolated every such meaningless term has no interest for us, save the interest attaching to the question "What does it mean?"—a question that, as you see, really is equivalent to "What relation has the expression to the rest of the content of my mind?" If we are ever to learn anything new, we must have this irreducible surd of interest. One single unknown thing or term rouses our curiosity because it stands out against all the known and demands explanation. But a series or group of such unknowns daunts us. Savages are not so much interested as distressed by the wonders of civilization. They cannot take them in. "There are too many people, too many houses, too many of everything. We are tired of it all."

Habit is Fatal to Interest.

There is a similar failure of interest in the perfectly familiar. The formation of habit is fatal to interest. We are not interested in our habitual duties or functions; and, though we resent interference with them, it is the resentment that causes the interest, not the interest the resentment. The club veteran is not really interested in the chair he has sat in for the past forty years—but he is at once greatly interested when he finds some ignorant new member sitting in it. Put shortly, the matter may be stated: The old has exhausted all its interest, while the new has not yet acquired any. It is the new in an old setting, or the old in a new setting, that rouses interest.

Revive Related Ideas.

If a fact is to be presented in a particular context, it is always well to revive all the related ideas, so that they may form a suitable setting for the new fact. If a connexion can be established between the old facts and the new, there is interest aroused. If this connexion comes with more or less of a shock of surprise, the interest is increased. From this point of view, interest may be described as the hedonic tone accompanying mental assimilation.

Present Facts suggestively.

It is sometimes possible to carry the preparation further, and not only have the ideas gathered together in such a way as to give the new idea a welcome, but so to work upon them that there arises a positive desire for the coming fact. Facts may be so presented to the mind as to make it clamorous for another fact to complete a combination.

Even such simple devices as the notice on the front board of the sandwich man: "Don't look at my back," are successful in creating a vacuum that the mind insists upon filling. Human nature acts like the rest of Nature when brought face to face with a vacuum. When the teacher has brought his class to the point of wanting to know certain things he has made a good use of interest.

It is not always either necessary or desirable that the teacher should indicate to the pupils what he desires them to be interested in. What he has to do is to present his facts in such a way that they shall inevitably arouse interest of a certain kind. The teacher who is always explaining, always talking, invariably has to account for a great leakage of interest. The enthymeme is a logical form the full meaning of which has not yet been realized by many teachers. The homely phrase "putting two and two together" represents a process of the first importance in the use and cultivation of interest. To feed a class with premisses and to leave to it the easy work of supplying conclusions is an

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excellent way of arousing interest. Even if there be no real thought involved, there is distinct advantage in any way of presenting truth that ensures that the pupil shall assimilate it. "Why not tell him the conclusion, since it is already implied in the premisses?" is a question that betrays a misconception of the place of co-operation in teaching. It *does* matter whether the fact is stated baldly by the teacher or deduced with pikestaff directness from materials supplied. It may be a poor thing, but it is the pupil's own, and is held by him in a totally different way from that in which he holds facts given him directly.

Interest as Self-activity.

Interest is in its very nature active. It implies a certain satisfaction in contemplating what is brought before the mind; but along with this satisfaction is the desire for a more extended field. There is always a purpose to be served where there is interest. This purpose may rest content with fulfilment on the ideational plane, or may seek an outlet in real life; but from the point of view of interest the difference is immaterial.

The activity that marks interest is self-activity. A child is always most interested in what he himself does. Accordingly, one of the most important principles in making our teaching interesting is to throw as much work as possible on the pupils. It is so easy for the teacher to make the blunder of applying the laws of interest to his own case, and of mistaking the glow of satisfaction he feels after doing a bit of teaching, for an indication that his pupils are interested. Teachers cannot be too frequently reminded that not what they do is important, but what their pupils do. The test must always be applied to the pupils, not to the teacher.

"The Essence of Feeling Interested."

As a rule, the less prominent the teacher makes himself in the teaching process the more interested the pupils become, because the more is left for them to do. At first sight, this may seem a plausible argument in favour of lazy teachers. But in order that the pupils shall do most of the work during the lesson hour the teacher must do most of the work before the lesson hour. The essence of feeling interested is the sensation of working from one's own initiative. Now it appears that we are here face to face with two irreconcilable positions. The teacher must so arrange the work that the pupils cannot but act in a particular way. Yet the pupils must be allowed to follow their own initiative. The explanation is that the teacher in his arrangements takes account of the nature of the pupils. He knows that under given circumstances they must act thus and thus, because of their very nature. The child is allowed to follow the laws of his own development, because the teacher has studied those laws and has planned accordingly. It may be said that, after all, under these circumstances the children are deceived. They are not really free. They are dancing in chains. But they are as free as any other creatures that exist in a world of established laws. They are as free as the teacher, for example, who has to submit himself to the laws of their nature, in order that he may accomplish his ends. Fortunately we are not here called upon to go any further in the direction of metaphysics.

Competing Interests.

It is too often forgotten that interest in any one thing can be aroused only at the expense of withdrawing it from some other thing. Any given interest is the result of a struggle among various claimants for that interest. In educational work we are so busy with the positive side that we are apt to neglect the negative. We often fail to rouse interest in one thing because we neglect the fact that interest is already engaged with something else. We ought to pay more attention than we usually do to the external claims on the interest of our pupils. Most teachers are now keenly alive to the need for a good system of ventilation; but they seldom correlate this need with the question of retaining the interest of the pupils. Yet there is no more formidable competitor for the interest of the children than the headache that results from breathing foul air. A headache has an absorbing interest for most people. Again anything striking and new in the room, whether in the way of apparatus or adornment, is an element to be reckoned with in the struggle for interest. Even personal peculiarities on the part of the teacher may have an adverse influence. The pupil who is anxious to keep an exact record of the number of times the master uses the phrase "as it were" during the course of the lesson, is not in a suitable frame of mind to give his whole-hearted interest to anything else.

In the actual process of teaching the same competition for interest is going on, and there is danger that the teacher will fail from the very importance he attaches to *rousing* interest. He is so occupied with winding up the clock of interest that he forgets that it is necessary to let it run down. Any interest roused during a lesson must either be of fundamental importance to that lesson, and so to be retained throughout, or it should be allowed to exhaust itself before a new interest is introduced. There are certain interests so strong in themselves that they should never be introduced at all in the course of a lesson. It is folly during the match season, for example, to introduce the subject of cricket. In spite of the teacher's best endeavours, aided by the good will of the boys, the paramount external interest will refuse to be banished. But even with matters that legitimately belong to the lesson there may be minor interests aroused that do serious damage unless they are allayed. The best way to kill an interest is to satisfy it. Accordingly, all subordinate points of interest should be ruthlessly explained away, though the main interests of the lesson are carefully conserved. If a story is told to illustrate a particular point, that story should be complete in itself and should have a definite end—even though the end is not in itself essential to the point to be illustrated. A clergyman, for example, wished to illustrate the "love that is shed abroad in our hearts" by a reference to what had happened to a couple of children in the bush in Australia. He gave a vivid description of the adventures of the little ones, till at last the fatal words "lost in the bush" began to have a personal application. The horrors of the night among the trees were emphasized in order to bring into greater relief the glory of the sunshine in the morning. As soon as the clergyman had got the sun up, he fell at once into a glowing comparison of this flood of light with the flood of love that is shed abroad in our hearts. This was bad teaching: for while the interest of the teacher wandered into the realms of metaphor the interest of the children remained with these babes in the wood. How did they get out? Were they very hungry? What did their mother say?—these were the questions to which the pupils were giving more or less satisfactory answers while the preacher was dealing with his spiritual application. It may be admitted that the ending is artistic, inasmuch as it left something for the imagination of the hearer. But this is precisely what it ought not to have done as a part of a lesson. An ending should have been supplied—the more commonplace the better, so long as it set free the pupils' interest and allowed it to flow into the channel the teacher wanted.

All side references should be so plain as to lead to no spirit of inquiry being aroused with regard to them. Preachers frequently err in this respect. It is always a mistake to make such a reference as: "In the words of one of our most distinguished novelists ——." It is a challenge to the congregation to place the quotation. "As George Meredith remarks in 'The Egoist'" leaves no room for inquiry. Those who know Meredith have a slightly increased interest in wondering which words are to be quoted; but their interest is exactly what the speaker wants. Those who do not know Meredith are left, at least, calm; they are freed from the responsibility of trying to place the words elsewhere—for example, in Hall Caine.

Teacher's Interest and Pupil's Interest.

It is sometimes argued that in order to be interesting the teacher must be himself interested; but there is clearly a distinction between the teacher's interest and the pupil's. The pupil ought to be interested in the subject taught, while the teacher cannot be expected to have anything like the same keenness, since it is all familiar ground to him. Yet it cannot for a moment be expected that an uninterested teacher will rouse the interest of his class. The fact is that teacher and pupil, during a well taught lesson, are both interested—but in different things. The teacher's interest centres in the interaction of minds: he is less interested in the facts he is presenting than in the effects these facts are producing on the minds of his pupils. All the same, interest is infectious; the intellectual glow that accompanies the action and reaction of active minds on each other ought to accompany every lesson. The interest of the master cannot fail to inspire the pupil, even though the incidence of interest be different in the two cases. The form in which the teacher may show his interest depends to some extent on his temperament. If there is any choice between the two extremes, it is better to show too much interest than too little. It is, in particular, a great pity when a teacher—through fear of talking too much, or giving his pupils more help than he ought—withdraws within himself and deals with the class in a coldly intellectual way. Speaking generally, however, a well taught class acts like a grateful blaze on a cold day, and interest begets interest.

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The CHAIRMAN said that the main difficulty with which the teacher had to contend was that of making his subject interesting to his pupils, and the lecturer had not only shown them how to overcome this difficulty, but had done so in a manner which was extremely interesting in itself. He had dealt with the subject from the point of view of the working of the human mind, and so made it more interesting than it would otherwise have been.

Mr. ORCHARD observed that in order to be interesting in teaching it was important to teach from the pupil's point of view. Clearness and simplicity were of the greatest importance, and the teacher must see that the matter presented bore proper relation to the knowledge acquired by the pupil. Care should also be taken not to weary the class by making the lesson too long. Considerable use might be made of the interrogatory method in arousing the interest of the pupils.

A vote of thanks to the lecturer concluded the proceedings.

THE MODERN LANGUAGE ASSOCIATION.

THE PARIS MEETING.

[*From our Special Correspondent.*]

THE meeting of the Modern Language Association in Paris began on Thursday, April 14. A more auspicious time could hardly have been chosen, though it is only right to say that the date was fixed long before the conclusion of the Anglo-French agreement. It was with Miss Williams, the energetic President of the International Guild, that the idea originated, and to her enthusiasm was the success of the meeting largely due. More than a hundred members of the Association, at least half of them ladies, availed themselves of the invitation, and received a hearty welcome in one of the amphitheatres of the Sorbonne. Prof. Beljame, whose name is so well known in connexion with English studies in France, introduced the visitors to the Minister of Public Instruction, M. Chaumié, who had kindly come up from the country for the purpose. Nothing could be more cordial than his Excellency's speech. It was acknowledged in graceful terms by Sir Hubert Jerningham on behalf of the Association. Naturally all three speakers dwelt on the recent agreement, and their reference to it gave additional warmth to the courteous hospitality characteristic of Frenchmen under all circumstances. The business of the meeting was opened by M. Hovelacque, who has recently passed from a professorship at the Lycée Carnot to the chief inspectorship of English studies. His discourse was a lucid exposition of the principles of the direct method of teaching modern languages, which has recently been made obligatory in France. These principles are now pretty well known, but a few lines may be given to M. Hovelacque's statement of them. The object, as laid down by authority, is the "effective possession of the foreign language." A child of three has, in a very real sense, an "effective possession" of his mother tongue. The teacher's aim, then, is to give to the lowest classes a small vocabulary, correctly enunciated, absolutely at the speaker's command without conscious effort of memory, and always embodied in sentences. The words and phrases used must be associated with real objects or feelings, not with corresponding words in the mother tongue. This oral instruction should cover two years, not necessarily to the exclusion of some written work; but throughout the cultivation of the ear and the vocal organs is to take precedence of the education of the eye. For the next two years reading the foreign language is the main object, the material to be chosen so as to follow naturally on the oral lessons of the previous years, and to extend very gradually the vocabulary acquired in them. Translation is avoided; the interpretation of unknown words and phrases in the foreign language is, as much as possible, secured by what is already known in that language. Thus these four years are distinctly preparatory to the literary studies of the following period. How effective these literary studies can be made was exemplified by a visit to the higher classes of the Lycée Molière, one of the best girls' schools in Paris. A lesson on Shakespeare's "Richard III.," given entirely in English, would have done credit, whether regard be had to the teaching or to the performance of the pupils, to any English school. M. Hovelacque was followed by Dr. Heath, of the Board of Education Library, who read an interesting paper on "The Place and Treatment of Modern Languages in the English School Curriculum." To our great regret, a paper by Prof. Sadler, President of the Association, was not forthcoming, owing to the indisposition of the Professor. He had intended to treat the very interesting subject of "Some French Influences in English Education."

The sitting of Friday was opened by M. Baret, Maître de Conférences à la Sorbonne, on "The Organization of Secondary Education in France." He pointed out that almost from the beginning of the last century subjects other than classics and mathematics had found a place in the curriculum, but that it had gradually become overcrowded. To remedy this evil, and to meet the wants of pupils intended for different careers, modifications had been introduced. At present there were running side by side four different curricula, of which the leading subjects were respectively (1) Latin and Greek, (2) Latin and modern languages, (3) Latin and science, (4) science and modern languages. Each of these was so arranged as to have a convenient break at the end of four years; so that a boy leaving school at fifteen or sixteen would have received an education complete as far as it went. M. Baret further expressed his agreement with M. Hovelacque as to the direct method, putting the training of the ear and the vocal organs in the first place, but pointing out that neither written exercises nor the judicious study of grammar by means of examples was excluded.

M. Baret was followed by Mr. Storr, who read an amusing paper on the changes that had come over modern language teaching in England. He introduced some capital stories, including an experience of his own school-days some fifty years ago, when he had seen a French class melting away, little by little, till the master was roused from a brown study by some accidental (or intentional) noise. He pointed out how for many years the comparative indifference both of masters and of boys to the study had interfered with its progress, and augured a far better future both for the subject and for its teachers. The direct method, he said, was making rapid strides in Great Britain. Throughout the paper the audience were kept in the best of spirits by a series of anecdotes and epigrams with a serious thread running through them, and it concluded with an earnest protest against the common fault of setting trivial books for study. It was absurd that there should be quite a number of school editions of such uninstructive stories as "Le Roi des Montagnes" and "Colomba." With most of the principles of the direct method the lecturer expressed his agreement, but he was distinctly opposed to the exclusion of translation into the mother tongue.

The afternoon was devoted to papers of a more distinctly literary character. M. Georges Pellissier, the well known author of "Le Mouvement Littéraire du XIXme Siècle" and other works on contemporary literature, discoursed on French contemporary prose, or, more strictly, on French novels. He classified recent works on imagination under three heads—Naturalist or Realist, Impressionist, and Symbolist. At the head of the realists stood Flaubert, whose "Madame Bovary" aimed simply at reproducing things as they are, without introducing the feelings or judgments they called up in the mind of the writer. Such writing was distinctly objective, excluding the subjective or personal element, "tout ce qui trahit le moi." In "Madame Bovary" the emotions described were of universal application, not far-fetched or accidental—a characteristic not always to be found in his followers, among whom Zola, Guy de Maupassant, and Ohnet are to be reckoned. Necessary results of this point of view were the absence of invention and imagination, and a readiness to take words from any source, technical or otherwise, provided they expressed the exact idea—an extension, in fact, of Victor Hugo's

Plus de mots sénateurs, plus de mots roturiers.

Flaubert was especially distinguished by his very careful choice of words; in some of his followers the hospitality accorded to technical words was apt to degenerate into coarseness. Opposed to the realists were the impressionists, who, so far from suppressing the subjective element, sought above all to render the impression produced on their own minds. In a sense the historian Michelet may be looked upon as the founder of this school, but its chief representatives were the brothers de Goncourt. Among the peculiarities of their style may be mentioned the invention of new words such as *mélancolieux*, *brouillardeux*, to express more subtle shades of meaning than *mélancolique* or *brumeux*, the use of adjectives as nouns, the preference of the imperfect to the past definite as more vivid, and the frequent employment of ellipses. There is, in fact, in their style a sort of unstable equilibrium. Daudet, to a certain extent, belongs to this school, but he is more moderate and restrained, and avoids their tendency to be morbid and neurotic. Lastly, the symbolists, who are more conspicuous in poetry than in prose, are characterized by vagueness and at times by a tendency to play fast and loose with grammar.

M. Pellissier was worthily followed by Prof. Hudson, of the University of London, who took for his subject contemporary poetry as exemplified by Rudyard Kipling and William Watson. The age of the great Victorian poets, of whom Swinburne was the sole

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survivor, had come to an end, and no poet had yet risen to take their place. But the two poets named, while not rising to greatness, exemplified distinct literary tendencies. Kipling had at once made his mark by his virility, his imperialism, and his discovery of a new and interesting field; Watson's fame had grown but slowly, but his success was well deserved by his scrupulous adherence to the great principles of all noble art. He excelled especially in terse poetic criticism, of which the lecturer quoted some brilliant examples. Without venturing to prophesy, the lecturer expressed his belief that the great poet to come must combine Kipling's strength with Watson's striving after artistic perfection.

The next day was devoted to visits to various *lycées*, the ladies starting as early as half-past seven, to be in time for the first lesson at 8.30. All of us were struck with the successful way in which English and German lessons were conducted on the direct method, with the pleasant relations between teachers and taught, and with the evident interest of the pupils in their work. The class-rooms are spacious and well lighted, and the appliances excellent. One thing seemed wanting—a supply of pictures on the walls, which, with us, is commoner in girls' schools than in boys' schools. The afternoon was spent in a very pleasant visit to the Lycée Lakanal, situated a few miles out of Paris in what was formerly the Royal Park of Sceaux. It is partly a boarding school, partly a day school. We were received at the gate of the park by the teaching staff, and walked up to the school along the avenue, where the boys were ranged on each side. In the great hall we were received by the *proviseur*, M. Bazin, who welcomed us in a cordial and humorous speech, and passed us on to an adjoining room adorned with a fresco of a football scrimmage, where we drank champagne, which, as he told us, "donne de l'esprit même à ceux qui n'en ont pas," and listened to an English address. We replied with a hearty cheer and a few words recognizing how much we had to learn from France, and expressing the hearty wish "Floreat domus Lakanalis." The buildings are on a magnificent scale; the dormitories extremely airy, each with a curtained cubicle for a master on a sort of estrade; the bath-rooms, furnished with tepid douches, were extremely well arranged; a swimming bath is shortly to be constructed. The dining-rooms, the gymnasium, and the large hall for entertainments and indoor games are spacious and exquisitely kept. It was characteristic that the only occupant of the infirmary was a small boy who had broken his leg at football. The park is arranged for various games; a set of hurdles for *la course aux haies* looked formidable to those of us who are no longer young. Nothing could be pleasanter or more courteous than our reception and the way in which we were shown about by the professors and some of the elder boys.

On a subsequent day M. Dispan de Floran gave us an enthusiastic account of the Lycée and its methods. As is known, the traditional *lycée* has the characteristics both of a seminary and a barrack—characteristics which are gradually being modified. In recent years many ideas have been borrowed from the English public schools, especially in the direction of physical exercises. Steps, too, are being taken to modify the strict uniformity of organization which has hitherto prevailed. With this view, four schools, of which Lakanal is one, have been constituted *lycées autonomes*, in which considerable freedom is given to the governing body and the *proviseur* in respect both of finance and of general management. Such innovations as the provision of private rooms for some of the elder boys and the introduction of manual work and of commercial instruction are examples. On one point there seems likely to be no imitation of English ways: the boarding house kept by a master is quite out of harmony with French ideas from the point of view both of masters and of the public. Very interesting is the annual publication of the Lakanal, entitled *Acta et Gesta*, containing a record of the school year and articles by professors and old and present boys. The experiences of a young English student are particularly noticeable. The list of distinctions gained by "Old Boys" includes, among many of a higher type, the appointment of one of them to the editorship of *Le Monde Sportif*. On our return to Paris we wound up the day with a *soirée* given by the *Guilde Internationale*, where a recitation of the Trial Scene in "The Merchant of Venice" by French young ladies, and of a scene from Molière by English young ladies, went off with great spirit.

On Sunday the Association was hospitably entertained at afternoon tea at the British Embassy. On Monday the morning, sitting was devoted to phonetics. Prof. Passy gave a very interesting *causerie* on some remarkable applications of that science. The first was to a problem in comparative philology—why do we find side by side Græco-Latin *pater*, Germanic *fadar*, Celtic *athir*? The transition from *p* to *f* is comparatively simple and is illustrated by modern dialectical phenomena. But why has the labial altogether disappeared in Celtic? Some North American tribes—for example, the Iroquois—have no labials in their language, and are quite contemptuous of Europeans who "talk with their mouths shut." In South America a tribe called the Botocudos wear pieces of wood, but only small pieces, as ornaments on their lower lips—a practice not conducive to the pronunciation of labials. However, they do succeed in pronouncing them. In South Africa a tribe is found who both wear wooden ornaments on their lips and have no labials in their language. Putting these and other facts together, there is strong reason for connecting lip ornaments and the absence of labials. Another interesting application is the contrivance of Dr. Forchhammer for representing visually the difference between *p*, *b*, and *m* to deaf-mutes. The lip-movement is the same for all three; it is supplemented by signs with the hand, each corresponding to a movement of the other organs concerned.

Prof. Passy was followed by Dr. Edwards, who illustrated from the Japanese pronunciation of certain English words some of the principles of phonetics. The Japanese language has five defined vowel-sounds, which may be either long or short. Our own has more, though of course not all possible ones. Thus a Japanese attempting to pronounce English words avails himself of the nearest sound in his own tongue. Dr. Edwards added some interesting details as to the chief difficulties of English children in pronouncing French and German, the result of the examination of a great many secondary schools.

The final meeting was opened with a lecture by Prof. Seignobos, of the Sorbonne, author of an excellent history of the nineteenth century, on the best way for a foreigner to study contemporary France. One of the commonest mistakes is to look upon the French as inconstant; the fact is that among the various peoples making up the French nation two political conceptions of opposite tendency and nearly equally balanced are always in existence; so that the country has long been in unstable equilibrium. Even in the Austro-Hungarian Empire there are not so many different nationalities as in France—nationalities differing in physical characteristics, in habits, and in language—French being really, so to speak, only the official language. Thus the North includes the Frankish Flemings, the people of Lorraine, the Germanic population of Burgundy and Franche Comté, the Scandinavian Normans, and the Bretons akin to the people of Devon and Cornwall. Similar divisions exist in the centre and in the South. It is not correct to say that Paris governs France: it is rather the meeting place of conflicting parties. Least of all is the Paris *boulevardier* the representative Frenchman: types of various parts of France may be found in Paris, but they must be carefully sought out. Nor is the Paris press the best medium for studying French politics. On the whole, the North-East is the most energetic and influential part of the country. Among the peasantry many different types exist: the coarse Picard boor of Molière and Balzac is quite different from the more refined type correctly described by Georges Sand. M. Seignobos added many useful suggestions as to the classes of persons most capable of giving information about their respective districts, and exhibited a political map of France, pointing out the constancy of the several districts to their principles and party. At the conclusion of his lecture M. Morel, delegate of the French *Société de Professeurs de Langues Vivantes* expressed his pleasure at the visit of the Association, and held out hopes of a return visit on the part of the young Society he represents. Mr. Eve then briefly thanked the authorities for the cordial welcome given to the Association, and for all the kindness its members had received. The Vice-Rector of the University, M. Liard, responded, and in the course of a pleasant and humorous speech announced his intention of recommending the establishlishment of ten *bourses* or exhibitions to enable medical and legal students to continue their studies in England.

THE BOARD OF EDUCATION have issued a circular to Local Education Authorities informing them that collective examination held by the Board of Education for enabling candidates to qualify for engagement as pupil-teachers will take place on Saturday, May 14, 1904, with supplementary examination for those candidates who, owing to some sufficient reason, are not able to attend on the earlier date, on Friday, May 20.

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OPEN COURT.

Thay say . . .
Quhat say thay?—Lat thame say!

SCIENCE IN SECONDARY SCHOOLS.

By the Rev. William Burnet, M.A.

The Education Act of 1902 will, I feel sure, do good service to the country by co-ordinating the several branches of education—primary, secondary, technical—under the one Central Authority, and so preventing the overlapping and collision in administration which have proved so mischievous. Such a change has long been wanting, and the absence of it has caused very serious inconvenience to all concerned, as well as much waste of public money. There is, however, one feature of the new regulations for secondary schools which seems to be open to grave objection: that is, the prominence given in them to science and mathematics. Until within the last few years these subjects had not received that degree of recognition which their importance demands, and which is assigned to them in most civilized countries, even in Japan. Inattention to this matter, as well as to technical training, was greatly retarding our commercial and industrial progress and placing our merchants and manufacturers at a considerable disadvantage in their competition with foreign nations. These causes have led to some radical changes in our system of secondary education.

Now the Board of Education has made two divisions of secondary day schools. Those of Class A were formerly known as "the schools of science," and were administered by the County Councils. They must provide a "thorough and progressive course of science, together with the subjects of a general education." Not less than thirteen hours per week must be allotted to the obligatory subjects, viz., Mathematics, Physics, Chemistry, Drawing, and Practical Geometry, and not less than ten hours to other approved subjects, including English and at least one foreign language; but two of these ten hours may be devoted to some form of manual instruction, and two others of them to mathematics or art. In other words, of the twenty-three hours seventeen may be applied to science and mathematics and manual occupations, and only six to English and a foreign language. Is this, it may be asked, a reasonable proportion of time for these and other equally important subjects? It should, indeed, be understood that none are to be admitted into these science schools under twelve years of age, and unless the Inspector considers them fitted to benefit by the course. Moreover, in the case of girls, instruction in one of the biological subjects, xiv., xv., or xvii. (*i.e.* Human Physiology, General Biology, or Botany), may, with the approval of the Board, be substituted for Physics, and either elementary science for Chemistry. Practical work will be required in each case. Still, even under these conditions, it may be asked—with no small astonishment—how, in the case of such young pupils, sufficient room can thus be left for their other lessons, such as grammar, history, geography, composition, &c., so indispensable to even an elementary education?

When we turn to the schools of the second division, B, we find the same conditions of age and fitness enjoined, and grants are to be dependent on compliance with the rule that not less than nine hours per week, including not more than five hours for Mathematics, be devoted to Science, both theoretical and practical, the latter being taught in approved laboratories. Here, again, we meet with a similar disproportion, though in a less degree. If the hours should be, as in many such schools, six per day or thirty per week (including intervals of recreation), we should have almost three-tenths of the school time limited to this one branch of instruction.

Under these circumstances is there not much reason to fear that the general training of these young people may prove superficial and unsatisfactory? Aiming too high it may hit nothing. Moreover, these arrangements are surely far too uniform and inelastic. There is no allowance made for the very various capacities and tastes of children of even the same age and the same social status. All alike are to be stretched on the same hard Procrustean bed of scientific teaching, and for the same length of time in every week throughout their course. Whatever may be the abilities with which Nature has endowed them, and whatever may be their mental defects, they must pass through the same ordeal. Nor is any consideration paid to the requirements of their future callings. Some with decidedly scientific tastes may take to such instruction with as much avidity as does a duck to water; while others, probably a large majority, regard it as simply drudgery, and their parents complain that their school time is wasted on subjects which will in no way qualify them for their future callings.

Very different might be the result if the elements or simple notions of science were taught to all the scholars for, say, one or two hours weekly; and then any specially intelligent pupils who may wish to remain at school after the age of fifteen were admitted to the higher scientific training of which they may be found capable. The appalling ignorance of ordinary branches of knowledge to be seen in many who have passed through the elementary mill is sufficient proof of the unsuitableness of such higher training for all. I speak from information supplied by some who have made the attempt. In a higher elementary school where chemistry and botany and other physical sciences are taught by competent masters not a few girls have been met with who did not know that the Earth rotates round its axis, the causes of the seasons, or the simplest applications of the law of gravity. For such the most elementary notions are all that they can receive at first, as well as careful grounding in those general subjects that would prepare them for the duties of their after-lives. Manual occupations and technical training for boys, and domestic economy for girls, may, of course, with great advantage be combined with their mental culture. All that we venture to object to in the new system is that the proposed standard is often too high as regards the majority of scholars, and that the other branches of their education may be consequently more or less neglected.

It may serve to throw light on this perplexing problem if we now compare with our own new system the methods pursued in some other countries. In Germany, for instance, we understand that only the elements of science are taught in the elementary and lower secondary schools, and fuller, more advanced teaching is reserved for the *Gymnasien* and colleges. Some time ago, Mr. Hughes, writing in the *Contemporary*, stated that "German education has a philosophical basis, and no practical working in science is done in any primary or higher primary—and, indeed, in few secondary—schools. Even the girls are not taught cookery or laundry work, nor is manual instruction taken up in these German schools to anything like the extent that we might imagine." This statement has since been confirmed in the same periodical by Sir William Ramsay. It is certain that German educationists do not err in the direction we are now indicating of excessive attention to science; nor, if they are beginning to outstrip us in trades and manufactures, is their scientific or technical teaching in such schools the cause. These subjects are, for the most part, relegated to special institutions.

In the French *écoles primaires supérieures*, or higher elementary schools, which are, in some respects, superior to the secondary, the course includes arithmetic, the elements of algebra and geometry, and *notions* of physical and natural science in their application to agriculture, industries, and hygiene. The number of hours devoted to these and other subjects is increased according to the ages of the pupils, and as they reach the second or third year of their course.

In the Swedish *Gymnasier*, or secondary schools, four to five hours per week in all standards are given to mathematics; two to three to science in the first five classes; two to three to natural history, physics, and chemistry only in the highest classes; the total of school hours ranging from twenty-seven to thirty-two.

In Portugal the latest school reform dates from 1894, and in the *lycées*, or secondary schools, four hours per week are assigned in all sections to mathematics, two to five to natural and physical science, out of from twenty-four to twenty-eight per week. But there the number of hours devoted to these subjects is graduated according to the age and standing of the pupils during the seven years of instruction. In the higher primary schools of Lisbon of twenty-eight hours, two are given to arithmetic; two to geometry; five to natural science; but the pupils at the end of their primary course have passed an oral and written examination as well as have received a certificate of having completed their compulsory attendance. The conditions are therefore much more stringent than those proposed for our own schools. The sifting process no doubt eliminates most of those incapable of benefiting by more advanced instruction, and so the standard in every department can be maintained.

Hungary is not a land to which we should naturally turn for suggestions on this subject; still, we find from a very interesting report on the school system there lately issued by our own Board of Education that their secondary schools are divided into classical and modern. In the modern *Realschulen* from twenty-eight to thirty lessons are given weekly. Of these three to four are on

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mathematics, two to three on natural history; whilst in the *higher* classes three to five are added on physics, two to three on chemistry. No physics are taught until the pupils reach the third class; chemistry is taught only in the fourth, and in the grades above it. In Hungary the pupils must either have passed an entrance examination or give evidence that they have passed through the four lower classes of an elementary school.

Our last appeal shall be to the United States. From the "Report on Secondary Schools' Studies," published in 1892, we learn that the course extends over four years, and the school day and week are measured by periods. In the first year, of twenty-five weekly periods four are assigned to algebra; in the second four to algebra and geometry; four to botany or zoology; in the third year, four are added for physics, and three for astronomy and meteorology; whereas in the fourth year ten of thirty-three weekly periods are assigned to science.

In all these countries it appears that the scientific teaching is given only to those fairly qualified to receive it, and that the time spent on it is proportioned to their age and progress, leaving ample time for the other branches of education. If the same provisions were made for our secondary schools, all objection would be removed.

REVIEWS.

THE LAST TWENTY YEARS OF VICTORIA'S REIGN.

A History of England. By the Rev. J. Franck Bright, D.D., Master of University College, Oxford. Period V.: *Imperial Reaction* (1880–1901). (4s. 6d. Longmans.)

The final volume of Dr. Bright's well known outline of English history covers but a little more than twenty years; and, as these are the years that close the reign of Victoria, the author has to run the gauntlet of conflicting contemporary opinion. Although we differ from him at points, and sometimes sharply, we recognize his difficulties, and we are too grateful for a book of really live history to press any particular objections—except one, which happily does not involve party controversy. If we are to "think Imperially," the first question of all is the position and condition of India. Now, while Dr. Bright chronicles the large public incidents of the time, and drops hints—if hints they be (for they are scarcely plain enough to be caught up by any one that has not studied Indian affairs)—he gives no real indication of the serious problems of government and administration that are naturally arising out of the rapid intellectual and social transition. His unfortunate comments on the "so-called" National Congress (as if that jibe were not antiquated) might have been avoided by a perusal of the annual proceedings of the body and by an elementary familiarity with its actual history. We must remind Dr. Bright of the reply made some ten years ago by Sir Richard Garth, ex-Chief Justice of Bengal, and a good Conservative, too, to Sir George Chesney, then member for Oxford, who had written of the Congress substantially in the strain of Dr. Bright, though more fully and bitterly. Sir Richard, after particular details, said:

> I will tell you what they have done. They have dared to think for themselves; and not only for themselves, but for the millions of poor ignorant people who compose our Indian Empire. They have been content to sacrifice their own interests and to brave the displeasure of Government, in order to lend a helping hand to those poor people. They have had the courage and the patriotism to denounce abuses which have disgraced our Indian rule for years past, which have been condemned by public opinion in India and in England, and to which the Indian Government appear to cling with a tenacity which is utterly inexplicable. They have dared to propose reforms which, despite the resistance of Government, have been approved by Parliament, and to endeavour to stay that fearful amount of extravagance which has been going on in India for years past, and has been the means, as some of our best and wisest counsellors consider, of bringing our Eastern Empire to the verge of bankruptcy. That is what these good men have done to deserve the taunts and insults of the member for Oxford City, and the relentless persecution of the Government of India.

To say that such an immense gathering, representative of all classes and creeds and the principal occupations, and meeting in all the great cities of India, one after another, year after year since 1885 (not 1887), is "little more than the mouthpiece of the class of educated Bengali Babus," is anything but "history." The importance of this matter lies in the fact that the Congress gives formal expression to the popular movement, and that this movement is too pressing to be passed off by formulas of careless contempt. The facts must be looked in the face, at least by an historian.

Dr. Bright indeed is doubtful whether his volume has any right to the title of "history": at any rate, it is a narrative and judgment of contemporary events and opinion, which is very welcome. Prominent, of course, are such central facts as "the Irish question, the reconstruction of parties, a conservative legislation infused with liberal ideas, a temperate Imperial foreign policy, and an unprecedented advance in the importance of the colonies." Dr. Bright has expended enormous labour in winnowing from the vast heap of materials the really essential elements, and in reducing them to an orderly and well sustained narrative. His general reflections on the tendencies of the time are well considered and well worth consideration. "The one thing which makes itself obvious in the closing years of the late reign is the setting in of a strong tide of reaction, visible in nearly every branch of life. . . . Ambition and the love of rule, belief in extended empire, in restricted and selfish commerce, in the superiority of a military life, in the value and importance of the privileged classes, and the substitution of symbolism for higher spiritual creeds, are marked characteristics of the time, and are exactly those things which the last century prided itself on having left behind." Hence the appropriate descriptive title of the present volume. There are three maps (at end) and four plans (in text), all helpful.

COMMERCIAL GEOGRAPHY.

Handbook of Commercial Geography. By G. C. Chisholm, M.A., B.Sc. Fourth Edition. (Longmans.)

It is eleven years since the last edition of this standard work appeared. In the present edition the author has not only availed himself of the fresh statistical and general information constantly accumulating, but profited by his experience as a lecturer to re-write a good many paragraphs. In particular, increased attention has been given to the connexion between commercial geography and commercial history. Fresh maps and diagrams have been introduced, and the statistical tables in the appendix have been brought up to date. Probably considerations of printing have made it necessary to employ supplementary tables instead of adding fresh columns to the tables of the third edition. The new introduction deals with a good many topics of immediate interest, but wisely abstains from pronouncing any opinion on the fiscal question. The author calls attention to a conclusion drawn in the first edition of the book. "It is the tendency," he said in 1889, "of commerce to bring about a more equal distribution of industry all the world over, and to give more and more importance to purely geographical conditions." His inference was that English trade, though still likely to expand, was bound to expand at a slower rate—an inference which the intermediate years have fully justified. He points out, for example, that, while in the second half of the nineteenth century the British consumption of raw cotton has steadily increased and more than doubled in amount, our percentage of the whole world's supply is only three-fifths of what it was in 1850. Again, in 1853, the consumption of coal in the United Kingdom was double what it was in the United States; at the present moment the United States are ahead of us. Moreover, while our consumption of that mineral per head of population has remained practically stationary, that of the United States has increased by fully one-half. In the price of coal, too, the results are startling. In 1850 it was slightly dearer than with us; in 1901, thanks to the accessibility of the United States deposits and the facilities for the use of mining machinery, their average price is about three-fifths of ours. Among other points discussed are the causes making for the centralization and for the decentralization of industries, the possibilities of inland motor-carriage, and the results to be expected from the completion of the Panama Canal. The introduction concludes with a list of unsolved problems, among which is one now much to the fore—the significance of changes in the value of imports and exports per head of population.

With regard to the work itself, it may be sufficient to indicate the general lines on which it is constructed. Some sixty pages are devoted to the general facts relating to the production, distribution, and exchange of commodities. The discussion is necessarily far from exhaustive, but it is very suggestive to the teacher as to the points to be dealt with in the detailed treatment of different countries. The next hundred and fifty pages deal with the commodities themselves. The section devoted to wheat brings out many interesting facts. There is no month in the year in which there is not a wheat harvest in some part of the

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world. In productiveness per acre England, Holland, and Belgium stand highest, though exceeded by some parts of the Red River district in the United States and Canada. Italy, Russia, India, Argentina, and Victoria stand lowest. Wheaten bread is still a rarity for the poorer classes in a large part of the mainland of Europe, and was so in some parts of England less than a century ago. The relative advantages of beet and the sugar-cane are discussed at some length, and on all the more important articles of commerce, and, indeed, on the minor ones, interesting information is given. The imports of rubber into the United Kingdom have been multiplied by more than fifty since 1850. The range of the vine, at least as a wine plant, has been modified by commerce. Cotton is almost an example of perpetual motion: the best manure for it is cotton-cake. One of the causes of Germany's pre-eminence as an exporter of paper is its accessibility to populations that must dispose of their rags and do not want them back in the form of literature.

The remainder of the book is occupied with the commercial geography of the various countries of the world, and their advantages and disadvantages for particular industries. It is worth noting that among the disadvantages of our own country the author places the want of a decimal system of coinage, weights, and measures, and our irrational spelling. It need hardly be said that he does not attempt to reform the latter.

Science for All.

Cassell's Popular Science. Edited by Alexander S. Galt. Illustrated. Two volumes. (12s. each.)

These two volumes—we recently noticed the first—offer a wide variety of extremely interesting articles upon common things regarded from the point of view of science, and they are profusely illustrated and handsomely furnished forth. It is not only such immediately insistent things as the applications of electricity or the mechanism of a motor car that are expounded: the ordinary man is stimulated to think and to inquire by discourses on a piece of coal or limestone, a feather, a pond and its inhabitants, the vagaries of British weather, the anatomy of a London fog, the evolution of the rifle, the lifetime of a seed, the colours of animals, and so forth. The treatment is thoroughly popular, instructive, and at the same time suggestive. The volumes should be especially prominent in libraries frequented by "the general reader."

The Doctrine of Interest.

Interest and Education. By Charles DeGarmo, Professor of the Science and Art of Education, Cornell University. (4s. 6d. net. Macmillan.)

The President of Cornell has said that "Interest is the greatest word in education," and Prof. DeGarmo essays in this volume "to make a concrete application of the doctrine of interest to the matter and methods of education." The author looks to the training of the feelings as well as to the training of the intelligence: "interest, enthusiasm, mental attitude, and volitional habits are not the creation of a day"; and, "for this reason, methods of teaching have a powerful influence in generating and developing them." In a preliminary psychological analysis, simply conducted and expressed, Prof. DeGarmo practically restates the theory of interest set forth in Prof. Dewey's monograph "Interest as related to Will." Interest is to be a form of "self-expression." Distinguishing between "clear" ideas and "vivid" ideas, he finds that in the attempt to supply an education that should prepare for everything in general and nothing in particular, "vivid" ideas have got displaced and postponed "to the concluding stages of education, where they are least needed"; whereas they are most needed in the earliest stages. This leads him to a proposal for a normal boy's course of study, which he summarizes thus (pages 6, 7):

> Departments of work are prescribed in so far as they embody knowledge necessary either for earning a livelihood or for making life worth living; but the studies within departments, so far as they represent anything like equality of value, are to be made elective. In other words, students elect, not departments, but more or less equivalent studies within departments. The result is that all leading types both of knowledge and of training will be represented in each student's education, while the elasticity allowed gives each the best possible chance of discovering his greatest powers, and of finding those bodies of ideas which to him are most clear and vivid.

Another aspect of the same distinction is that "between sensory ideas and their motor reactions"; and "it is an almost irresistible tendency of the school to lay the chief stress of its efforts upon the sensory intellectual side of the mind, using outgoing expression only so far as the acquisition of knowledge or the drilling of the mind necessitates, so that the greatest sources of interest in the young remain almost untouched by the school" (pages 87–88). This introduces an interesting inquiry into the relation of school to country life and city life, the conclusion being that "education as now conducted does not restore what urban life has lost in educational influence." An English comparison evokes the opinion that, while "nothing is more antique than the instruction of English boys in the so-called public schools," yet "their play makes men of them, Mr. Kipling to the contrary notwithstanding." After a long quotation from "Tom Brown's Schooldays" (game of football), Prof. DeGarmo says: "This is the training that makes Englishmen. They might study Choctaw or Chinese and the mathematics of Ahmes; yet with such play they would grow up men." So the urban school of the future must have "extended exercises in all aspects of manual training, cooking, sewing, textile industry, drawing, music, and, later, laboratory practice in the sciences," furnishing "a complete co-ordination of motor and sensory powers." "Then the whole boy will be educated, and not, as now, but half of him" (page 115).

In the early stages, when the business of adult life is too remote to furnish motives for action and direct stimuli to interest, we must look elsewhere for the means of securing clearness and vividness of ideas in the minds of children. Prof. DeGarmo enumerates and illustrates a number of these, all grouping under manner and skill of presentation (concreteness, art of exposition, art of questioning, &c.). The treatment is simple, lucid, and concise; and the work is practical and suggestive. Though written in view of American conditions, it carries lessons for teachers everywhere.

GENERAL NOTICES.

CLASSICS.

A School Grammar of Attic Greek. By Thomas Dwight Goodell, Professor of Greek in Yale University. (5s. net. Appletons. Twentieth Century Text-Books.)

Like the other members of the series, this volume has the prime quality of attractiveness—large clear type well spaced, good paper, and flexible binding. Prof. Goodell has saved space by simplification of grammatical statements and by omission of non-Attic and rarer Attic forms and constructions. He might have gone further, we think, in a "school" grammar; at any rate, there is much that he might well have relegated to smaller type for later reading. The distinctive point in the Syntax is that the author has "sought to carry through consistently the principle of classifying by form," thus completely recasting the syntax of subordinate clauses. We certainly think that the current classification by function is the proper method, but Prof. Goodell's plan at any rate co-ordinates the grammar with the lexicon, and some learners may find it easier to study the matter in groups beginning with μή, ὅστις, ὅτι, ἵνα, &c. Simple subjunctive and optative sentences, and οὐ μή sentences, handled before subordinate sentences, lack for the moment—the psychological moment—the necessary means of adequate explanation. The numerous examples are specially instructive. Under a teacher the volume may be worked to great advantage, although we have grammars of home make that still hold the field in simplicity and accuracy of exposition and in clearness of arrangement.

Allen and Greenough's New Latin Grammar for Schools and Colleges, founded on Comparative Grammar. Edited by J. B. Greenough, A. A. Howard, G. L. Kittredge, and Benj. L. D'Ooge. (5s. Ginn.)

The volume exhibits a most careful revision of the edition of 1888. It embodies the well established results of the study of historical and comparative grammar during the past fifteen years, and the editors have frankly modified doctrines or forms of statement so as to bring the work up to the best modern knowledge. The arrangement, too, has been improved in not a few points. Altogether, the book stands in the front rank of scholarship and of educational efficiency. It is clearly printed on good paper, and strongly bound for much use.

Stories of the Ancient Greeks. By Charles D. Shaw. (2s. 6d. Ginn.)

A handy and pretty little volume of mythological and historical stories—thirty-two of each—with twenty-five pertinent illustrations. The author hopes "to brighten, if possible, other young lives by repeating for them the immortal fictions and the deathless histories which have been delivered to new audiences for thousands of years." He tells the stories very simply and very effectively. The volume ought to be in the hands of all children, for their own private reading.

A Latin Grammar. By William Gardner Hale, Professor of Latin, and Carl Darling Buck, Professor of Comparative Philology, in the University of Chicago. (4s. 6d. Ginn.)

"A working text-book, primarily adapted to the needs of high-school students," very clearly arranged and excellently printed and got up.

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The treatment is fresh, distinctive, and interesting. In the Phonology, Inflexion, and Word-formation the historical explanations are strictly to the point, and do not expand into comparative grammar; even justification of "departures from the usual practice" is reserved. The selection and the disposition of materials are alike excellent. In the Syntax much care has been taken to cover all the constructions that occur at the stage in view and to exclude such as do not; and the arrangement is suited as far as possible to indicate the probable relationships of the constructions treated. The growth of Latin usage is also steadily kept in view. Some unusual terms may at first sight wear a repulsive look—such as "volitive subjunctive," "anticipatory subjunctive," "determinative clause," and half-a-dozen more, already introduced in earlier publications of the senior author; but the meaning of them is quite obvious, and they may get naturalized here as they have been widely accepted elsewhere. The whole work is very independent, and it is executed with scholarly ability and care. It is a most vigorous and suggestive treatise, and well worth attention in our secondary schools.

MATHEMATICS.

Arithmetic for Schools and Colleges, Part I. By John Alison, M.A., F.R.S.E., and John B. Clark, M.A., F.R.S.E. (2s. 6d. Oliver & Boyd; Simpkin, Marshall.)

The text in general meets the requirements of a numerous class of students and their teachers, and makes the principles and practice of the subject clear to the reader. It discusses with sufficient fullness the usual course of arithmetic as far as simple interest, and the nature of the instruction given is determined by the growing recognition of the fact that practical skill must be accompanied by an appreciation of the *why* and the *wherefore*. The laws of operations are considered, and the pupil learns the value of literal symbols for securing general proofs. The treatment of approximate methods of calculation is essentially good; yet the section of the work devoted to these methods creates the usual impression of not being entirely satisfactory—an impression that must exist so long as there is no clear agreement between authorities as to the best rules to be observed. The question of operations with recurring decimals is rather summarily dismissed by the writers, and they omit to give the few definite and very valuable laws which obtain for determining in the cases of addition and subtraction the necessary and sufficient number of decimal places to which the calculations must be carried in order that the complete *period* may become evident.

Graphical Algebra. By the Rev. E. A. Phillips, B.A. (2s. net. Normal Correspondence College Press.)

One of the "Normal Tutorial Series," and intended to be a text-book serviceable to candidates reading for University Matriculation or preparing to compete for King's Scholarships and Certificates. The book contains a great deal of very useful information. Numerous errors have unfortunately crept in: many, but not all, are misprints. Some of the diagrams also are rather rough in general appearance—a disadvantage always, but especially in connexion with a subject in which neatness tells. Facilities for practice in graphical work are provided by means of a large collection of exercises.

A First Book of Geometry. By W. Ahrens, M.A. (Lond.), and J. David Paul, B.A. (Cantab.). (9d. Meiklejohn & Holden.)

A good little book, which deserves to be warmly welcomed. It is not proposed that its pages should do the work of a teacher, but that its well expressed and informal introduction to the simple facts of geometry should for the most part be committed to memory by pupils who have previously been convinced of the truth of the text by means of verbal explanations and practical experiment.

Practical Plane and Solid Geometry. By I. H. Morris and Joseph Husband, A.M.I.C.E., A.R.C.Sc. (2s. 6d. Longmans.)

The revision of the syllabus of the Board of Education has created a demand for text-books of a modified character. The present volume will practically take the place of the former work on practical plane and solid geometry written by Mr. Morris, and very well known to many teachers and students. The new treatise will, it is hoped, have a sphere of general usefulness in addition to a position amongst the class-books specially adapted to the requirements of Elementary Stage students working under the new regulations of the Board.

Vectors and Rotors. By O. Henrici, Ph.D., LL.D., F.R.S., and G. C. Turner, B.Sc. (4s. 6d. Edward Arnold.)

Teachers and students alike will find the work a very valuable one, dealing as it does both skilfully and in sufficient detail with the elementary theory of vectors and rotors. Moreover, it is able at once to take its place among standard text-books; for the substance of it is an amplification of Prof. Henrici's course to first-year students at the City and Guilds Central Technical College. The work of arranging the materials in a form suitable for publication has been most ably carried out by Mr. Turner. The essential properties of scalars, vectors, and rotors are first presented as viewed from the standpoint of pure geometry. Each type of quantity is then considered fully, and the student learns how to define his quantity accurately and how to represent it completely in graphical form. He is taught also its algebra, which is carefully compared with ordinary algebra, and, finally, his attention is drawn to its applications in physical science. It may be mentioned, for example, that an outline of the elements of the important science of graphical statics is included in the volume, so as to serve as an illustration of the practical application of the theory of rotors.

ENGLISH LITERATURE.

William Makepeace Thackeray. By Charles Whibley. (2s. 6d. Blackwood. "Modern English Writers" Series.)

Mr. Whibley sprinkles a fluent narrative with an extensive variety of critical observations that will be found suggestive, even though they may not always command assent. Thackeray, indeed, is peculiarly open to criticism, both in matter and in manner; and his own free practice of the art discourages any attempt to shield him from a practitioner on himself. It requires considerable elasticity of nature and breadth of experience to enter into full sympathy with Thackeray. Mr. Whibley seems to stand apart at a theoretical point of view of his own, and so to miss the mark now and then; only it is well to have the independent outlook. We cannot think that he understands Barry Lyndon as well as Thackeray did; nor should we always agree with him when he takes up Thackeray's standpoint: it may be that, as in "Vanity Fair," "Thackeray had a perfect right to choose such puppets for his shows as aroused his keenest interest," but a diagnosis of the author's cynicism from his cynical selection and treatment (without relief) of a whole bookful of characters is not only natural, but fairly justifiable. We are thankful for one critic at least that has the courage to admit that the "Adsum" scene in "The Newcomes" "does not move" him, though it seems less than just to call the Colonel "the travesty of a man." Mr. Whibley is strongest, we think, on the "English Humourists," "the worst blot on Thackeray's reputation." Pity that he could not let supposed characteristics of modern authors severely alone (pages 158, 181), and take the trouble to avoid obvious and ugly lapses in the use of the King's English.

"The Arden Shakespeare."—*King Henry the Fifth.* Edited by Herbert Arthur Evans. (3s. 6d. Methuen.)

The introduction handles with directness and vigour the connexion of the play with the preceding historical plays, the date, and the history of the text; and discusses very effectively Shakespeare's conception of Henry V., the conduct of the action, and the supposed allusions to contemporary politics. The text follows substantially the Folio of 1623, variations being scrupulously recorded. The notes, though elaborate, are concisely presented; they are usefully explanatory and illustrative. In v. ii. 360 it does seem a perverse fidelity to retain the *l* of "Præclarissimus" when it is so obviously "the perpetuation of a blunder by the copyist." The volume is fully worthy of its place in the series.

Tennyson's "In Memoriam." Edited by Charles Mansford, B.A., late Vice-Principal, Westminster Training College. (2s. net. Swan Sonnenschein.)

A most patient, sympathetic, and instructive attempt "to exhibit the broad outlines of the poem, and to trace the invisible thread running through the songs and giving unity and continuity to the entire series." The writer modestly disclaims the attitude of a critic, and wishes to be taken simply as "a learner and teacher." The analysis and notes will be found most interesting and suggestive. The volume is daintily got up.

ENGLISH READERS.

Messrs. Routledge issue *The Ludgate Story Readers*, a new series in six Books, with an introductory volume forming a bridge from "Sonnenschein's Infant Primer, No. 2," under the editorship of R. R. C. Gregory (Eltham). The matter consists of stories, more or less graduated, with poetical pieces intermingled or appended, and a considerable number of generally good illustrations. The introductory volume (6d.) consists of three favourite stories divided into short sections for reading lessons, with 62 illustrations. Book I. (8d.) draws its stories mainly from Miss Edgeworth; Book II. (10d.), mainly from Mrs. Sale-Barker: both have word-exercises at the end, and each has 30 illustrations by Charles Robinson. Book III. (1s.) opens with "The Story of a Wolf," by Geraldine Butt, and contains also tales by Miss Edgeworth, Lord Brabourne, and others, and some attractive poems; and it has 16 illustrations by E. M. Tongue. Book IV. (1s. 3d.) consists mainly of stories from Andersen and Grimm, with simple and interesting poetical pieces, and biographies and notes at the end. There are about a score of illustrations by Edward Read. Book V. (1s. 6d.) is Harriet Martineau's "Feats on the Fiord," with a good appendix of poetical readings and 41 illustrations. Book VI. (1s. 6d.) is an adaptation of H. C. Adams's "The Boy Cavaliers," with pertinent poetical pieces, and notes and explanations appended. There are 16 illustrations by J. Ayton Symington. The series is well printed in bold type, and strongly and attractively bound. The volumes will supply interesting reading concurrently with others more specially graduated in the earlier stages.

Messrs. Routledge also add to the series of "Ludgate Standard-Authors Readers" two capital volumes that will be universally welcomed: *Stories of Ancient Greece* (Hawthorne), and an adaptation of *Don Quixote* (Cervantes), both edited also by Mr. Gregory (1s. 6d.

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each). The former has 12 illustrations, the latter 45; and both are excellently got up.

Cassell's *Union Jack Series*, Book IV. (1s. 2d.), provides excellent and varied matter in prose and in verse, with plenty of apt illustrations in colour and in black and white.

Messrs. Nelson have now completed their fine series of geographical readers under the general title of "The World and its People." We have now before us the first volume and the last. *First Steps in Geography* (10d.) weaves elementary notions into a story, mostly of interesting dialogue—a charming and effective book. The final volume, *The World, with special reference to Greater Britain* (2s.), is most comprehensive, interestingly descriptive, and based on the latest knowledge. Its 416 pages are liberally adorned with 32 coloured plates and maps, and countless illustrations in monochrome, plans, &c. It forms a most able and useful completion of a well planned, instructive, and attractive series.

Mr. Marby furnishes the revised edition of the second volume of *The Marshfield Maidens and the Fairy Ordina* (which is, in plain terms, "a consecutive narrative embracing a complete course of Domestic Economy and Training for Home Duties"), by Mrs. W. H. Wigley (1s. 6d.), with a fresh set of illustrations in a more modern style. The text has not been altered, nor was there any need for alteration. It is practical and attractive.

GERMAN READING BOOKS.

Messrs. Hachette add to their attractive and useful series of "Popular German Authors" for elementary and intermediate classes *Die Geschichte von Kalif Storch* (Hauff) and *Die Wunder im Spessart* (Immermann), both very competently edited by Prof. Aloys Weiss, Ph.D., with brief biographical introduction, vocabulary (including necessary notes), and questions for oral practice. (6d. each.)

Messrs. Heath include in their excellent "Modern Language Series" a selection of three sketches from Detlev von Liliencron's *Kriegsnovellen*, under the title of *Anno 1870: Kriegsbilder*, edited, with biographical introduction, a fair number of helpful notes, and a full vocabulary, by Dr. Wilhelm Bernhardt, of Washington (1s. 6d.). Also *Niels mit der offenen Hand* (Heyse), similarly edited by Edward S. Jones, Professor of Modern Languages in South Carolina College (1s. 6d.).

Mr. J. W. Cartmell has re-edited for the "Pitt Press Series" *Das Jahr 1813* (Kohlrausch), originally prepared and edited by Dr. W. Wagner (3s., Cambridge University Press). The spelling has been modernized, and the notes have been entirely recast; and the proof sheets have been read by Dr. Breul. The volume has thus been thoroughly brought up to date. The four maps will be found very useful and handy.

Messrs. Williams & Norgate have issued a third revised edition of Herr Heinrich Weisse's *Exercises in German Composition* (3s. 6d.)—a systematically progressive course, taking German life and manners as its main materials. The authorized orthography has been adopted. Also a second edition of Herr Weisse's *Elements of German* (3s.), "intended to give students ample means of understanding the forms and constructions of the German language, and also of using them correctly in simpler composition." Both volumes possess high merits. They are based on large practical experience.

HISTORY.

Lingard's History of England, newly abridged and brought down to the Accession of King Edward VII. By Dom Henry Norbert Birt, O.S.B. With a Preface by Abbot Gasquet, D.D. (5s. George Bell.)

A thick volume of 645 pages, with inset marginal headings, seven useful maps, and six genealogical tables, in good type, and flexible binding. The work is a fresh abridgment of Lingard's very able History, with necessary corrections and with continuation from the Revolution of 1688. It is intended to supersede the epitome made some fifty years ago by James Burke, which has been widely used in Catholic schools. Many matters are more amply treated—for example, constitutional questions; and generally the book is brought up to the level of modern requirements. The later history suffers compression, as usual: the reign of Victoria is condensed into 23 pages. Though we differ from the author at many points, we have no doubt that the work will be found a great improvement on its predecessor and very efficient for its purpose.

Blake's Historical Charts. Nos. I. and II. (1s. 6d. net, and 9d. net. Sam. W. Blake, 200 Western Road, Sheffield.)

No. I. is a general chart of English history from 1066 to 1902. No. II. sets out the contemporary European rulers during the same period, with the treaties chronologically arranged. The compilation implies great care and ingenuity, and is lucid and effective. These charts ought to prove very useful in visualizing and fixing historical relations, especially if they are not pressed into task-work, but left largely to the curiosity of the pupils themselves.

BIOGRAPHY.

The Young Pretender. By Charles Sanford Terry, M.A., Professor of History and Archæology in the University of Aberdeen. (Methuen. "Little Biographies.")

Prof. Terry has extricated from the vast library of Jacobite literature—the literature of the '45 alone is enormous—and from the "obscuring haze of romance and tradition," a very simple, comprehensive, and accurate outline of the chequered career of Prince Charles. "He was, after all, very human, a high-spirited lad, rash and impetuous to a fault, and later a man broken by despair and irksome inactivity — an *homme sauvage*, addicted to the 'nasty bottle,' ill-treating his mistress, a brute to his wife, and generally his own worst enemy. Such a picture, for all the sad truth of it, will never wholly supplant the more generous one which the hearts of thousands have framed and will frame to the end of the chapter." The Prince had his full share of the Stuart temperament, and of the magnetism that inspired such blind and disastrous devotion. The Forty-Five, with the closing scene on Culloden Moor, is described with much spirit, and the subsequent wanderings in the Highlands with sustained interest. The later dark course of intrigue and demoralization is remorselessly depicted from historical records, with a very different, but still with a peculiar, interest. Prof. Terry thinks the Prince's "tragedy" was that "he was of the class of men blessed with a career, clear and unmistakable, yet doubly cursed in the inability to fulfil it." If this be so, we fancy the inability must be stretched farther than the fact that "Fate put him for ever outside the lists" after Culloden. The little biography has essential historical value. It is very nicely printed and got up, with twelve excellent illustrations, mostly portraits.

Henry Grattan. By Percy M. Roxby. (3s. 6d. net. Fisher Unwin.)

This volume is the Gladstone Prize Essay in the University of Oxford, 1902—very appropriately, for it deals with a most instructive and critical period in the history of Ireland, and recounts the great and noble career of one of Ireland's best loved sons and one of the most ardent Irish friends of England. With other great names in the same field, Mr. Roxby yet acquits himself with distinct credit. Naturally he gives main attention to Grattan's Parliament, and his treatment is eminently fair, though we should differ from him on certain leading conclusions. The work, though containing nothing essentially new, rises distinctly above the ordinary prize essay. It shows throughout independent and capable handling of difficult subjects, and it is conceived in excellent tone, and presented in fluent style. "Of the five great boons which Grattan sought for Ireland—Free Trade, Parliamentary Reform, Commutation of Tithe, Catholic Emancipation, and Legislative Independence—the first four are accomplished facts"; and Mr. Roxby shows very clearly how the fifth was set up and thrown down. "But, after all, the value of Grattan to Ireland is not to be estimated by his achievements. The memory of such a career is a priceless heritage to his countrymen for all time to come." The frontispiece portrait is from an engraving by Godby after Pope.

MENTAL SCIENCE.

Swain School Lectures. By Andrew Ingraham, late Head Master of the Swain Free School, New Bedford, Massachusetts. (5s. net. Chicago: Open Court Publishing Co. London: Kegan Paul, Trench, Trübner, & Co.)

Nine lectures, of an elaborately familiar or popular cast, wherein the author makes tentative approaches—flank attacks—upon the gist of important abstractions. "Psychology (about Minds)," "Epistemology (about Knowledge)," "Metaphysics (about Existence)," and "Logic (about Things as related)" seem to us to be better treated directly and pointedly than in an entertaining series of illustrative suggestions that are apt to overwhelm the real points to be seized. "A Universe of Hegel" is characteristically Hegelian: the neophyte will carry away only the nebulous. "Seven Processes of Language" and "Nine Uses of Language" are extremely fresh and interesting, and readily appreciable; and "Many Meanings of Money" at least impresses one fundamentally important element in the mechanism of modern trading. "Some Origins of the Number Two" is a humorously fantastic treatment in the interest of abstract conception. The lectures indicate a strong and flexible intellect and a practised capacity of effective expression.

The Study of Mental Science. By J. Brough, LL.D., Professor of Logic and Philosophy at the University College of Wales, Aberystwyth. (2s. net. Longmans.)

Five clever and resourceful "popular lectures on the uses and characteristics of logic and psychology." "Mental Science as ancillary to other studies"—as "helpful in raising the level of attainment in other liberal studies pursued side by side" with it—makes a strong claim on behalf of psychology and logic for a place in schemes of education; and the next two lectures impress the "independent value" of these two sciences. The remaining two lectures deal with "The Sources and Plan of Logic" and "Method in Psychology." The treatment seems to us to wander far too much "in some way of distant analogy," and to wrap the essential matters in variegated clouds of literary allusion. The points, when rescued from the wrappages, appear to be sound; and the literary expression is extremely

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fluent and dexterous. But it is a wondrously roundabout way of doing business. Granted that it is effective for an oration, is it effective for instruction and persuasion?

RELIGION.

Corinthians II.: (1) In "Cambridge Greek Testament for Schools and Colleges"; (2) in "Cambridge Bible for Schools and Colleges." Both edited by A. Plummer, M.A., D.D., sometime Master of University College, Durham. (3s. and 1s. 6d. net. Cambridge University Press.)

(1) contains the Greek text (Westcott and Hort), an introduction dealing fully with pertinent literary considerations (genuineness of the Epistle, place and time, occasion and purpose, contents and results, language and style, &c.), an elaborate series of scholarly notes fairly meeting the difficulties—and truly the Epistle "bristles with difficulties"—and three appendixes treating special points at some length. Dr. Plummer now accepts "with much reluctance" the theory that the last four chapters were originally part of another and earlier letter—a theory that he at one time opposed vigorously. The handling is most conscientious and capable throughout. (2) is a reduced edition, suitable to younger students, and not requiring much, if any knowledge of the Greek. Both volumes are eminently judicious, instructive, and useful.

The Acts of the Apostles. Edited by A. E. Rubie, M.A. (2s. Methuen's Junior School Books.)

The introduction deals fully and lucidly with the authorship, title, date, materials, and text of the book, and sketches the contemporary conditions. The notes are full, fresh, and discriminating, and there is much useful matter in appendixes. Three maps illustrate Paul's missionary journeys. An attractive and useful edition.

Youth and Duty: Sermons to Harrow Schoolboys. By the Right Rev. J. E. C. Welldon, D.D. (3s. 6d. Religious Tract Society.)

Many pupils and friends—and others besides—will be glad to have this memorial of Dr. Welldon's religious teaching at Harrow, although the contents do not quite cover the full extent of that teaching. There are twenty sermons—brief, simple, manly, and practical.

MISCELLANEOUS.

The Case of The. Fox; being his Prophecies under Hypnotism of the period ending A.D. 1950. A Political Utopia. By William Stanley. (2s. 6d. Truslove & Hanson.)

The.—that is, Theodore—Fox, a poet of sorts, in hypnotic sleep induced by an egregious Dr. Aerius Pott, described in thirteen *séances* the development of public and social life in the next half-century, and Mr. Stanley edits the notes left by Dr. Pott. "Paris has now become the capital of the United States of Europe" (page 30). The Channel Tunnel "cost five hundred million pounds" (page 81). "Stanleytown-on-Thames" is figured as frontispiece—a model of city-building. The "chimney-pot" hat is gone, and men wear "soft vegetable silkoid shirts and collars" (page 189). Secondary education has also undergone change—we do not readily understand what. Those that like this kind of speculation will, no doubt, be interested in the poet's visions. The book is nicely got up; but the proofs should have been more carefully revised.

Mr. Frowde publishes the fifteenth edition (the first for publication) of the *Rules for Compositors and Readers at the University Press, Oxford*, by Horace Hart, M.A., Printer to the University, the English spellings being revised by Drs. Murray and Bradley (6d. net). The little book has grown gradually in practice, and every part of it has been carefully thought out. It may tend to secure a wider uniformity. It is intended, of course, only for general application, not to control or censure any particular style adopted on special grounds.

NEW EDITIONS.

Messrs. Chapman & Hall publish a "Student's Edition" of *David Copperfield* (pages xxxviii + 533), with biographical introduction, notes, and analytical list of characters, at the astonishing price of 1s. net. The type, though small, is clear.

Mr. Murray issues a new edition of Mr. H. G. Keene's interesting sketch of the *Literature of France*. (2s. "University Manual Series.")

Messrs. W. & A. K. Johnston publish a fresh edition of *Britain on and beyond the Sea*, by Cecil H. Crofts, M.A. (1s. 6d.), with good map.

We welcome a new edition of Dr. Charles A. McMurry's *Special Method in Geography*, revised and enlarged (3s. net, Macmillan).

The Religious Tract Society furnish a new shilling edition of *The Pilgrim's Progress*—the text carefully collated with Bunyan's final revision—in excellent print, and with eight coloured illustrations by Harold Copping.

Messrs. Williams & Norgate have issued a third edition (with additions) of Herbert Spencer's polemic *Against the Metric System* (3d.).

Messrs. Watts have published for the Rationalist Press Association a sixpenny edition of Rénan's *Life of Jesus*. The work is complete, and the volume is in excellent print.

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MATHEMATICS.

The remainder of 15359 is unavoidably held over this month.—Ed.

15435. (Professor Nanson.)—If t_r be the arithmetic mean of the r-th powers of n positive quantities which are not all equal, prove that t_1, t, $t_3^{\frac{1}{2}}$, $t_4^{\frac{1}{3}}$, ... are in ascending order of magnitude.

Solution by Colin M. Ross.

$$\frac{(A+A+\dots \text{ to } a \text{ terms})+(B+B+\dots \text{ to } b \text{ terms})+\dots}{a+b+\dots} > (A^aB^b\dots)^{1/(a+b+\dots)}$$

(Hall and Knight's *Higher Algebra*, § 253), *i.e.*,

$$[(aA+bB+\dots)/(a+b+\dots)]^{a+b+\dots} > A^aB^b\dots \quad \dots\dots\dots(1),$$

In (1) substitute A^p, B^p, ... for a, b, ...; also A^{r-p}, B^{r-p}, ... for A, B, ..., where $r > p$; then

$$[(A^r+B^r+\dots)/(A^p+B^p+\dots)]^{A^p+B^p+\dots} > (A^{A^p}B^{B^p}\dots)^{r-p}\dots\dots(2),$$

In (1) again substitute A^p, B^p, ... for a, b, ... and A^{s-p}, B^{s-p}, ... for A, B, ..., where $p > s$; then

$$[(A^s+B^s+\dots)/(A^p+B^p+\dots)]^{A^p+B^p+\dots} > (A^{A^p}B^{B^p}\dots)^{s-p};$$

therefore

$$[(A^p+B^p+\dots)/(A^s+B^s+\dots)]^{A^p+B^p+\dots} < (A^{A^p}B^{B^p}\dots)^{p-s}\dots\dots(3),$$

Hence, as $r-p$ and $p-s$ are positive quantities, from (2) and (3),

$$[(A^r+B^r+\dots)/(A^p+B^p+\dots)]^{p-s} > [(A^p+B^p+\dots)/(A^s+B^s+\dots)]^{r-p}$$

Put $s = 0$; then

$$[(A^r+B^r+\dots)/(A^p+B^p+\dots)]^p > [(A^p+B^p+\dots)/n]^{r-p};$$

therefore $[(A^r+B^r+\dots)/n]^p > [(A^p+B^p+\dots)/n]^r$,

i.e., $t_r^p > (t_p)^r$ .....(4).

Putting $r = 2, 3, 4, \dots$, and $p = 1, 2, 3, \dots$, successively in (4), it follows that $t_2^2 > t_1$, $t_3^3 > t_2^2$, $t_4^4 > t_3^3$, and so on; therefore t_1, $t_2^{\frac{1}{2}}$, $t_3^{\frac{1}{3}}$, $t_4^{\frac{1}{4}}$, ... are in ascending order of magnitude.

15487. (A. M. Nesbitt, M.A.)—Resolve into factors

$$\begin{vmatrix} a & . & . & l & . & . \\ . & b & . & . & m & . \\ . & . & c & . & . & n \\ g & . & . & d & . & . \\ . & h & . & . & e & . \\ . & . & k & . & . & f \end{vmatrix}.$$

Solutions (I.) *by* R. F. Whitehead, B.A.; (II.) *by* Prof. Sanjána, M.A.; (III.) *by* W. F. S. Churchill.

(I.) Expanding by Laplace's method,

$$\text{determinant} = (ad-gl)\begin{vmatrix} b & . & m & . \\ . & c & . & n \\ h & . & e & . \\ . & k & . & f \end{vmatrix} = (ad-gl)(be-hm)(cf-kn).$$

(II.) If $a = gl/d$, we have the first column equivalent to the fourth multiplied by g/d; so that the determinant is zero. Hence $(ad-gl)$ is a factor; so also are $(be-hm)$ and $(cf-kn)$. There is no numerical factor, as the chief diagonal constituent is $abcdef$.

(III.) $$\Delta^2 = \begin{vmatrix} a & . & . & l & . & . \\ . & b & . & . & m & . \\ . & . & c & . & . & n \\ g & . & . & d & . & . \\ . & h & . & . & e & . \\ . & . & k & . & . & f \end{vmatrix} \begin{vmatrix} . & . & l & . & . & -a \\ . & -m & . & . & b & . \\ n & . & . & -c & . & . \\ . & . & d & . & . & -g \\ . & -e & . & . & h & . \\ f & . & . & -k & . & . \end{vmatrix}$$

$$= \begin{vmatrix} . & . & A & . & . & B \\ . & . & . & . & C & . \\ -A & . & . & D & . & . \\ . & . & -D & . & . & E \\ . & -C & . & . & . & . \\ -B & . & . & -E & . & . \end{vmatrix}$$

where $A = an-lc$, $B = af-lk$, $C = hm-be$, $D = dc-ng$, $E = fg-dk$

$$= C^2\begin{vmatrix} . & A & . & B \\ -A & . & D & . \\ . & -D & . & E \\ -B & . & -E & . \end{vmatrix} = C^2(AE+BD)^2,$$

$AE+BD = (ad-lg)(fc-nk)$;

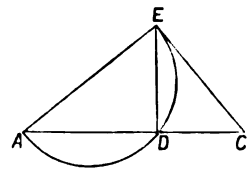
therefore $\Delta = \pm C(AE+BD) = \pm(hm-be)(ad-lg)(fc-nk)$

$= (ad-lg)(be-hm)(fc-nk)$.

Note.—This method of evaluating determinants by multiplying by the determinant reversed with the signs of alternate columns changed is of great use, and does not seem to be specially mentioned in text-books.

Geometrical Note.—To construct a right-angled triangle with the three sides in geometrical progression, the hypotenuse being given.

By Constance I. Marks, B.A.



Let AC be the given hypotenuse. Divide AC at D as in Euclid II. 11, so that

$$AC \cdot DC = AD^2.$$

From D draw DE perpendicular to AC, and with C as centre and radius equal to AD describe a circle cutting DE at E. Join AE and on AE as diameter describe the semi-circle ADE. AEC is the required triangle. For $AC \cdot DC = AD^2 = CE^2$; therefore CE is a tangent to the circle ADE, and, since AE is a diameter, therefore the angle AEC is a right angle; hence $AE^2 = AC \cdot AD = AC \cdot CE$.

15484. (Lt.-Col. J. Hickman.)—Smith takes a number in a small sweepstakes of 100 chances at 2s. 6d. each on a race in which 12 horses are entered. After drawing he forgets the name of the horse he drew, remembering only that it began with the letter *N*. When the race has been run he learns that the name of the winner begins with an *N*. The only further light he has as to the probability of his having won is that he believes $\frac{1}{20}$ of all racers bear names beginning with *N*. Proceeding on that assumption, find the precise mathematical value of his chance if the winner is to take $\frac{4}{5}$ of the stakes.

Solutions (I.) *by* D. Biddle; (II.) *by* V. Daniel, B.Sc., *and* E. F. Tipple.

(I.) Col. Hickman has done well to call attention, through the medium of this Question, the details of which are familiar to those who entered for the recent "*Times* Competition," to the unsatisfactory answer given to the example in the *Encyclopædia Britannica* (Vol. xix., p. 774), by reference to which the competitors were evidently intended to solve it. In the said example, the winning horse, like that drawn, is *black* (instead of being classed under the initial of its name); otherwise, so far as the chance of identity is concerned, the two are on all fours. The answer to the example, if applied to the present (or "Competition") question, would make the chance to be $1/(1+\frac{11}{20})$ or $\frac{20}{31}$, and, as $\frac{4}{5}$ of the stakes = £10, the required expectation is £6. 9s. $0\frac{20}{31}$d. according to the *Encyclopædia*. The method therein adopted is crude indeed, and I venture (though with some fear and trembling) to submit the following instead.

That one of the 12 horses has a name beginning with *N*, like that drawn, is certain; for the winner's name begins with *N*. The several chances that, of the 11 remaining horses, there are 0, 1, 2, 3, 4, ..., 11 with names beginning with *N* are given by the successive terms in the expansion of $(\frac{19}{20}+\frac{1}{20})^{11}$, namely, $\frac{19^{11}}{20^{11}}$, $\frac{11\,.\,19^{10}}{20^{11}}$, $\frac{55\,.\,19^9}{20^{11}}$, $\frac{165\,.\,19^8}{20^{11}}$, $\frac{330\,.\,19^7}{20^{11}}$, $\frac{462\,.\,19^6}{20^{11}}$, $\frac{462\,.\,19^5}{20^{11}}$, $\frac{330\,.\,19^4}{20^{11}}$, $\frac{165\,.\,19^3}{20^{11}}$, $\frac{55\,.\,19^2}{20^{11}}$, $\frac{11\,.\,19}{20^{11}}$, $\frac{1}{20^{11}}$. Here the common denominator is 204,800,000,000,000, whilst the several numerators are as follows:—

(1)	116490258898219,	(7)	1143957738,
(2)	67441728835811,	(8)	43005930,
(3)	17747823377845,	(9)	1131735,
(4)	2802287901765,	(10)	19855,
(5)	294977673870,	(11)	209,
(6)	21735197022,	(12)	1.

The numbers in parentheses not only represent the successive terms, but the number of horses having the particular initial *N* in the field, including the winner. These numerators must accordingly be divided severally and respectively by 1, 2, 3, 4, ..., yielding

116490258898219·000
33720864417905·500
5915941125948·333′
700571975441·250
58995534774·000
3622532837·000
163422534·000
5375741·250
125748·333′
1985·500
19·000
·08′3′

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These numerators divided by the common denominator represent Smith's chances when the horses in the field and initialed N are respectively 1, 2, 3, ..., 12. Their sum gives his total chance, namely,

$$\frac{1568904023411153\cdot250}{2048000000000000\cdot000} = \frac{627561693644613}{819200000000000},$$

or, instead of less than $\frac{3}{4}$, rather more than $\frac{3}{4}$; whilst his expectation, instead of being only £6. 9s. $0\frac{3}{11}$d., is £7. 13s. $2\frac{1}{2}$d.

(II.) However small the frequency of the winner's initial, it must of necessity occur once, and from Smith's discovery nothing can be argued as to the relative probabilities of truth of 12 possible hypotheses. Hence we are concerned only with the *a priori* probabilities of the 11 other initials including 0, 1, 2, ..., 11 N's. These are the several terms of the expansion $(\frac{1}{20}+\frac{1}{20})^{11}$. His expectation on the r-th of the hypotheses is $S\mu_r/r$; therefore total expectation

$$= S\Sigma\mu_r/r = 20S\int_0^{\frac{1}{20}}(\tfrac{19}{20}+x)^{11}dx = 20S\,I_{\frac{1}{2}}[1-(\tfrac{19}{20})^{12}] = (\cdot76607)\,S$$
$$= £7\cdot6607.$$

Had a group of two or more, discovering they possessed the winner's initial, met and desired to calculate their expectation, it seems to me that the *a priori* probabilities of the 12 hypotheses would give place to *a posteriori* probabilities dictated by the knowledge of 1 at least, 2 at least, ..., N's among the 11 names which exclude the winner.

15450. (Professor Langhorne Orchard, M A., B.Sc.)—Find the product of the sum and difference of the series

$1+6+21+52+105+\ldots$ to n terms, $3+14+39+84+155+\ldots$ to n terms.

Additional Solution by H. Chennakesava Iyengar.

Adding the two series, we have 4, 20, 60, 136, 260, ...;

$$2\cdot2+4\cdot5+6\cdot10+8\cdot17+10\cdot26+\ldots.$$

Now, in the series 2, 5, 10, 17, 26, ... the nth term $= n^2+1$; therefore $T_n = 2n(n^2+1) = 2n^3+2n$; therefore

$$S_n = 2\Sigma n^3+2\Sigma n = \tfrac{1}{2}n^2(n+1)^2+n(n+1) = \tfrac{1}{2}n(n+1)(n^2+n+2).$$

Subtracting the first series from the second, we have 2, 8, 18, 32, 50, ...; $2\cdot1+2\cdot2^2+2\cdot3^2+2\cdot4^2+\ldots$; therefore $T_n' = 2n^2$; therefore

$$S_n' = 2\Sigma n^2 = \tfrac{1}{3}n(n+1)(2n+1);$$

therefore $$S_n\cdot S_n' = \tfrac{1}{6}n^2(n+1)^2(n^2+n+2)(2n+1).$$

15472. (Professor Neuberg.)—On marque sur les côtés BC, CA, AB d'un triangle ABC les points A', B', C' tels que BA'/A'C = CB'/B'A = AC'/C'B = K. On sait que les droites AA', BB', CC' sont équipollentes aux côtés d'un triangle A"B"C". L'aire de ce triangle est minimum lorsque K = 1.

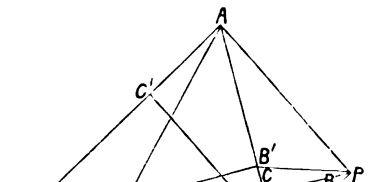
Solutions (I.) *by the* Proposer; (II.) *by* R. F. Davis, M.A.; (III.) *by* D. Biddle.

(I.) On peut projeter le triangle ABC orthogonalement sur un plan suivant un triangle équilatéral. Alors les lignes AA', BB', CC' se projettent suivant trois droites égales qui passent par un minimum lorsque A', B', C' sont les milieux de BC, CA, AB, ...

(II.) Draw A'P equal and parallel to BB'; then B'P will be equal and parallel to BA'. Join CP, AP. Since

$$CB' : B'P = CB' : BA'$$
$$= CA : BC,$$

and $\angle CB'P = \angle ACB$,



therefore the triangle CPB' is similar to the triangle ABC. Thus PC is equal and parallel to AC', and consequently PA is equal and parallel to CC'. The triangle AA'P has therefore its sides equal and parallel to AA', BB', CC'. The quadrilateral AA'CP is equal to the triangle ABC; for $\Delta APC = \Delta AC'C = \Delta AA'B$. The triangle AA'P is least when the triangle A'CP is greatest, that is, when A'C . CP is greatest, or when $[K/(K+1)][1/(K+1)]$ is greatest, which happens when K = 1. [Rest in *Reprint*.

15127. (Lt.-Col. Allan Cunningham, R.E.)—Factorise completely into *prime* factors $N = 10^{24}+\frac{17}{4}10^{12}+1$.

Solution by the Proposer *and* James Blaikie, M.A.

Let $N = x^8+\frac{17}{4}x^4y^4+y^8$; therefore $4N = (x^4+4y^4)(y^4+4x^4)$. Each factor is a Bin-Aurifeuillian, the resolution of which is known to be

$$4N = \{(x-y)^2+y^2\}\{(x+y)^2+y^2\}\{(y-x)^2+x^2\}\{(y+x)^2+x^2\}.$$

Now take $x = 1000$, $y = 1$; then N becomes the given number, and

$$4N = (999^2+1^2)(1001^2+1^2)(999^2+1000^2)(1001^2+1000^2)$$
$$= 998002\cdot1002002\cdot1998001\cdot2002001;$$

therefore $N = (23\cdot21737)(501001)(277\cdot7213)(2002001)$, **all primes.**

Note.—Similarly may be factorised

$N = 3^{48}+68\cdot3^{24}+2^8$; taking $x = 3^6$, $y = 2$.

$N = 5^{32}+68\cdot5^{16}+2^8$; taking $x = 5^4$, $y = 2$.

15441. (Professor Nanson).—Three triangles Δ_1, Δ_2, Δ_3 are inscribed in a conic. If Δ_2, Δ_3 are co-polar with Δ_1, then so is the triangle formed by the joins of corresponding vertices of Δ_2, Δ_3.

Solution by A. R. Richardson *and* A. M. Nesbitt, M.A.

Refer the conic to Δ_1 as triangle of reference.

$$S \equiv 2fyz+2gzx+2hxy = 0.$$

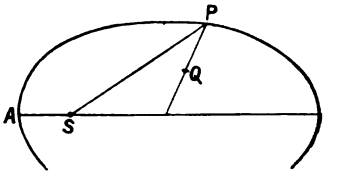
Eliminating x, y, z in turn from $hy+gz = 0$, $hx+fz = 0$, $gx+fy = 0$, we get $Fx = Gy = Hz$ as equations to the lines joining the vertices of Δ_1 with its polar triangle; therefore (1/F, 1/G, 1/H) are co-ordinates of the pole of Δ. This form will hold whatever triangle be taken as the triangle of reference. Therefore the pole of Δ_2 is (1/F', 1/G', 1/H'); of Δ_3, (1/F", 1/G", 1/H"), where F', F", ... are linear functions of F. Now the triangle formed by joining the vertices of Δ_2, Δ_3 has co-ordinates of its vertices linear functions of those of Δ_2, Δ_3, say $k\Delta_2+l\Delta_3$; hence the pole of ${}_3\Delta_2$ is $\left(\frac{1}{kF'+lF''}, \frac{1}{kG'+lG''}, \frac{1}{kH'+lH''}\right)$; but, since Δ_2, Δ_3 are copolar with Δ_1, therefore $F : F' : F'' = G : G' : G'' = H : H' : H''$; therefore ${}_3\Delta_2$ is also copolar with Δ_1.

15478. (Professor Nanson.)—If r, θ are the focal polar co-ordinates of the foot of a normal from r', θ' to a conic, prove that $r_1r_2r_3r_4 = b^2e^{-2}r'^2$, $\theta_1+\theta_2+\theta_3+\theta_4 = 2\theta'+(2n+1)\pi$.

Solution by Professor Sanjána, M.A., *and* Colin M. Ross.

The first part is Ex. 77, chap. x., in Smith's *Conic Sections*, k^2 being there put for b^2e^{-2}.

For the second result, let Q be r', θ'; let P have $\angle ASP = \alpha$, and let PQ be normal. Then α is found from



$$le\sin\alpha/(1+e\cos\alpha)r' = e\sin\theta'+\sin(\theta'-\alpha);$$

Smith, *Conic Sections*, § 165, Ex. 5. Let t denote $\tan\frac{1}{2}\alpha$, and we get the equation

$$\frac{le}{r'}\frac{2t}{1+t^2} = e\sin\theta'+e^2\sin\theta'\frac{1-t^2}{1+t^2}+\sin\theta'\frac{1-t^2}{1+t^2}-\cos\theta'\frac{2t}{1+t^2}$$
$$+e\sin\theta'\frac{(1-t^2)^2}{(1+t^2)^2}-e\cos\theta'\frac{2t(1-t^2)}{(1+t^2)^2},$$

which reduces to

$$e\sin\theta'\cdot2(1+t^4)+(1+e^2)\sin\theta'(1-t^4)-2t(1+t^2)(\cos\theta'+le/r')$$
$$-2t(1-t^2)e\cos\theta' = 0.$$

Hence $t^4(e-1)^2\sin\theta'+2t^3(\cos\theta'+le/r'-e\cos\theta')+2t(\cos\theta'+le/r'+e\cos\theta')$
$$-(e+1)^2\sin\theta' = 0;$$

so that, if the four values of α be $\theta_1, \theta_2, \theta_3, \theta_4$, we get

$$\Sigma\tan\tfrac{1}{2}\theta_1 = -\frac{2(\cos\theta'+le/r'-e\cos\theta')}{(e-1)^2\sin\theta'}, \quad \Sigma\tan\tfrac{1}{2}\theta_1\tan\tfrac{1}{2}\theta_2 = 0,$$

$$\Sigma\tan\tfrac{1}{2}\theta_1\tan\tfrac{1}{2}\theta_2\tan\tfrac{1}{2}\theta_3 = -\frac{2(\cos\theta'+le/r'+e\cos\theta')}{(e-1)^2\sin\theta'}, \quad \Pi\tan\tfrac{1}{2}\theta = -\frac{(e+1)^2}{(e-1)^2}.$$

Therefore

$$\tan\frac{\theta_1+\theta_2+\theta_3+\theta_4}{2} = \frac{-\frac{2(\cos\theta'+le/r'-e\cos\theta')}{(e-1)^2\sin\theta'}+\frac{2(\cos\theta'+le/r'+e\cos\theta')}{(e-1)^2\sin\theta'}}{1-0+\frac{(e+1)^2}{(e-1)^2}}$$
$$= \frac{4e\cos\theta'}{-4e\sin\theta'} = -\cot\theta' = \tan\{\theta'+(2n+1)\tfrac{1}{2}\pi\};$$

so that $$\theta_1+\theta_2+\theta_3+\theta_4 = 2\theta'+(2n+1)\pi.$$

15381. (Rev. T. Wiggins, B.A.)—At what times between the hours x and $x+1$ and between y and $y+1$ are the minute and hour hands in the former case in the same position as the hour and minute hands respectively in the latter case?

Solutions (I.) *by* Lt.-Col. Allan Cunningham, R.E., *and* A. M. Nesbitt, M.A.; (II.) *by* H. J. Woodall, A.R.C.Sc.

(I.) Let x hr. $+\xi$ min., y hr. $+\eta$ min. be the times indicated. Let α, β be the angular distances of minute hand from 0 hr. at those times; α, β

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be the angular distances of hour hand from 0 hr. at those times; a', b' be the angular distances of hour hand from x hr., y hr. at those times (all angles measured in degrees). Here x, y always < 12, and ζ, η always < 60; so that 0 hr. means 12 o'clock.

Now, 1 minute space of minute hand $= \frac{1}{60}\,360° = 6°$, 1 hour space of hour hand $= \frac{1}{12}\,360° = 30°$; therefore

$$\alpha = 6\xi, \qquad \beta = 6\eta, \qquad a' = \tfrac{1}{12}\alpha = \tfrac{1}{2}\xi, \qquad b' = \tfrac{1}{12}\beta = \tfrac{1}{2}\eta,$$
$$a = 30x + a' = 30x + \tfrac{1}{2}\xi, \qquad b = 30y + b' = 30y + \tfrac{1}{2}\eta.$$

But $a = b$, and $\beta = a$ (since the hands interchange positions); therefore $6\xi = 30y + \frac{1}{2}\eta$, and $6\eta = 30x + \frac{1}{2}\xi$. Solving these gives ($\xi$, η in *minutes*) $\xi = \frac{60}{143}(x + 12y)$, $\eta = \frac{60}{143}(y + 12x)$.

(II.) Let n be the number of minutes the hands are apart. While the hour hand moves over $60-n$ minute spaces the minute hand moves over $60(y-x)+n$ minute spaces, and therefore gains $60(y-x-1)+2n$ in this time. On ordinary clock faces the minute hand gains 11 minutes in 12; therefore

$$12\{60(y-x-1)+2n\} = 11\{60(y-x)+n\}; \quad \therefore\ 60(y-x)+13n = 720,$$

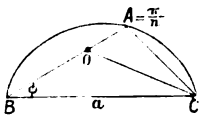
for example, shortly after 3 o'clock for the first position, about 12.15 for the second. Therefore $y-x = 9$; therefore $13n = 180$; therefore $n = 13\frac{11}{13}$. Now at 3 o'clock there is 15 minutes difference. The minute hand starting from the vertical position has to gain $1\frac{3}{13}$ minute spaces, and this it does in $\frac{12}{11} \times \frac{15}{13} = 1\frac{37}{143}$ min. Therefore the first position of the minute hand is 3 hr. $1\frac{37}{143}$ min., of the hour hand 3 hr. $15\frac{15}{143}$ min.; the second position of the minute hand is 12 hr. $15\frac{15}{143}$ min., of the hour hand 12 hr. $1\frac{37}{143}$ min.

15524. (R. Chartres.) (Suggested by Question 15447).—Find the mean value of the angle subtended by BC at all points of the area BAC, (1) when BAC is a segment of a circle and $A = \pi/n$, (2) when BAC is any triangle.

Solution by the Proposer.

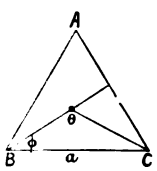
Taking the radius of circle $= 1$,

(1) $$M(\theta) = \pi - 2M(\phi)$$
$$= \pi - 2\int_0^{\pi - A} \phi \cdot \tfrac{1}{2}\,\frac{a^2 \sin^2(A+\phi)}{\sin^2 A}\,d\phi/\text{area}$$
$$= \pi - 2\int \phi\,[1 - \cos(2A + 2\phi)]\,d\phi/\text{area}$$
$$= \pi - 2\,\frac{[\pi^2(1-1/n)^2 - \sin^2 \pi/n]}{2\pi(1-1/n) + \sin 2\pi/n}.$$



If $n = 2$, then $M(\theta) = \frac{1}{2}\pi + 2/\pi$.

(2) $$M(\phi) = \int_0^B \phi \cdot \tfrac{1}{2}r^2 d\phi/\Delta$$
$$= \frac{a \sin C}{b}\int_0^B \phi\,\mathrm{cosec}^2(\phi + C)\,d\phi$$
$$= \frac{a \sin C}{b}(B \cot A + \log a/c),$$



with a similar expression for the other base angle;

therefore $M(\theta) = \pi - \left\{\frac{\cos A}{bc}(c^2 B + b^2 C) + \frac{\sin A}{bc}(c^2 \log a/c + b^2 \log a/b)\right\}$.

(i.) If the triangle is right-angled isosceles,

$$M(\text{supplement of } \theta) = \log 2.$$

(ii.) If the triangle is equilateral, $M(\theta) = \frac{1}{3}\pi$, which is evident since the sides subtend equal angles whose sum is 2π.

(iii.) Hence, also, if the figure is a regular polygon of n sides, the $M(\theta)$ ought to be $2\pi/n$.

QUESTIONS FOR SOLUTION.

15552. (G. H. Hardy, M.A.)—Prove that, if p and m are positive and m integral,

$$1 + \frac{(p+1)^m}{1!}x + \frac{(2p+1)^m}{2!}x^2 + \frac{(3p+1)^m}{3!}x^3 + \ldots = e^x P_m(x),$$

$P_m(x)$ being a polynomial of degree m all of whose roots are real and negative. Also prove that

$$\int_0^\infty e^{-x} P_m(-x)\,dx = (1-p)^m.$$

15553. (Professor Nanson.)—Eliminate x, y, z from

$$ax^2 + by^2 + cz^2 = 0,$$
$$(b-c)yz + (c-a)mzx + (a-b)nxy = 0, \quad lx + my + nz = 0.$$

15554. (J. J. Barniville, B.A.)—Having $u_n + u_{n+3} = 3u_{n+1} + 3u_{n+2}$, prove that

$$\left(\frac{5}{-1.7}\right)^2 - \left(\frac{13}{7.17}\right)^2 + \left(\frac{53}{17.73}\right)^2 - \left(\frac{193}{73.263}\right)^2 + \ldots = \frac{1}{2},$$
$$\left(\frac{5}{1.7}\right)^2 - \left(\frac{17}{7.23}\right)^2 + \left(\frac{65}{23.89}\right)^2 - \left(\frac{241}{89.329}\right)^2 + \ldots = \frac{1}{2},$$
$$\left(\frac{13}{-7.17}\right)^2 - \left(\frac{25}{17.31}\right)^2 + \left(\frac{109}{31.51}\right)^2 - \left(\frac{389}{151.529}\right)^2 + \ldots = \frac{1}{98},$$
$$\left(\frac{17}{-7.23}\right)^2 - \left(\frac{37}{23.47}\right)^2 + \left(\frac{151}{47.217}\right)^2 - \left(\frac{565}{217.769}\right)^2 + \ldots = \frac{1}{98}.$$

15555. (Robt. W. D. Christie.)—Let $p = a^2 + b^2$, $q = ac + bd$, $s = c^2 + d^2$, $ad - bc = 1$: prove $r^{2m} + 1 = ps$ and $r^{6m} + 1 = p(p - 2q + s)$; and more generally $(pt + r^m)^2 + 1 = pS$, $(pt + r_{3m})^2 + 1 = pT$, where r is any primitive root of prime $4m+1$, t any integer. Establish similar equations for prime $p = 4m-1$.

15556. (Lt.-Col. Allan Cunningham, R.E.)—Factorise completely into *prime* factors $N = G_4^4 + 8 + F_4^4$, where $G_n = F_0 . F_1 . F_2 . \ldots . F_{n-1}$ and $F_n = 2^{2^n} + 1$, a Fermat's number.

15557. (James Blaikie, M.A.)—If n be a number of r digits such that its square ends in the same r digits as the number, prove that (*a*) $10^r + 1 - n$ has the same property; (*b*) the square of $n-1$ ends in the same r digits as $10^r + 1 - n$; (*c*) the cube of $(n-1)$ ends in the same r digits as $n-1$. Also, if n be a number of r digits such that its cube ends in the same r digits, prove that (*d*) $10^r - n$ has the same property. Examples:

$890625^2 = \ldots 890625$, (*a*) $109376^2 = \ldots 109376$, (*b*) $890624^2 = \ldots 109376$,
(*c*) $890624^3 = \ldots 890624$, $6249^3 = \ldots 6249$, (*d*) $3751^3 = \ldots 3751$.

15558. (H. Bateman, B.A.)—If each generator of a ruled surface be twisted through an angle α about the normal at its central point, the new system form the generators of a new ruled surface having the same line of striction as the former one.

15559. (Professor R. W. Genese, M.A.)—An arc PQ of a uniform wire in the shape of an equiangular spiral attracts a particle at the pole O according to the law of nature. Prove that the resultant attraction is proportional to $\frac{\text{chord PQ}}{\text{OP . OQ}}$.

15560. (Professor Cochez.)—Construire les courbes—

(1) $y = 2^{(x^2-2x-1)(x+2)}$; (2) $y = \frac{1}{x-1} + \frac{1}{x-2} + \frac{1}{x-3} + \frac{1}{x-4}$.

15561. (C. E. Youngman, M.A.)—In a triangle ABC, with centroid G, that ellipse GBC is drawn for which A is the pole of BC; and to it any tangent EF across the angle A. Prove that the foci of the ellipse are also foci of the envelope of the circle AEF; the envelope being the inverse of a similar ellipse.

15562. (A. R. Richardson.)—Find the locus of the intersection of the directrices of two conics each of which touches two fixed conics, all to have a common focus.

15563. (R. F. Davis, M.A.)—Given a hyperbola whose eccentricity $= 2$, prove that the circle described upon any focal chord as diameter passes through the further extremity of the transverse axis.

15564. (A. M. Nesbitt, M.A.)—The normals at the extremities of a chord of an ellipse meet in the curve. Prove that the pole of the chord lies on a concentric ellipse.

15565. (Hon. G. R. Dick.)—If the bisectors of the base angles B and C of a triangle ABC meet the opposite sides in E and F, BC being given and the angle A constant, the line EF will touch a conic whose eccentricity is $\frac{1}{2}\,\mathrm{cosec}\,\frac{1}{2}A$.

15566. (D. Biddle.)—On the surface of a circle, of radius $=$ unity, a point (P) is taken at a distance x from the centre (O). Find the maximum, minimum, and mean areas of triangles inscribed in the circle and having P as their in-centre.

15567. (Solidus.)—Two equal circular discs are to be cut out of a rectangular piece of paper 10 inches long and 8 inches broad. What is the greatest possible diameter of the discs?

15568. (Professor Neuberg.)—Soient A′ le milieu du côté BC du triangle ABC, B′ et C′ les pieds des symédianes issues de B et C. Démontrer qu'on ne peut avoir A′B′ = A′C′ que si AB = AC.

15569. (S. C. Bagchi, B.A.)—Through the angular points of an n-sided plane figure, straight lines $l_1, l_2, \ldots, l_n$ are drawn. Show that they intersect again in $\left(\frac{\sum_{r=1}^{n} l_r}{2}\right) - \sum_{r=1}^{n}\left(\frac{l_r}{2}\right)$ points where $\left(\frac{1}{2}\right) = 0$.

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OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

9574. (Professor Ath Bijah Bhut.)—If $(4m+1)_a$ stand for the number of quadratic residues of the form $4m+1$ with respect to any prime number p, and $(4m+1)_b$ for the number of non-residues of the same form, show that, when p is of the form $4m+1$,

$$(4m+1)_a = (4m+3)_b, \quad (4m+1)_a > (4m+3)_a.$$

10349. (Professor Hain.)—Étant donné un triangle équilatéral ABC, si M, N, P sont les symétriques d'un point quelconque L par rapport aux trois côtés, démontrer que les droites AM, BN, CP se recontrent en un même point.

10383. (Professor Crofton, F.R.S.)—If n persons stand in a row, prove that (1) the number (N) of ways in which m things can be distributed among them in such a manner that no two consecutive persons are passed over is

$$N = \Delta^n 0^m + n\Delta^{n-1}0^m + \frac{(n-1)(n-2)}{1.2}\Delta^{n-2}0^m + \frac{(n-2)(n-3)(n-4)}{1.2.3}\Delta^{n-3}0^m + \dots;$$

and hence (2), n being large, if an event is found to occur m times in a period of n years, and never to fail for two years running, the problem of finding the probability of it failing to occur in a given year can be reduced to an equation in finite differences [n being large].

10390. (E. Césaro.)—Démontrer que la chaînette d'égale résistance, qui a pour équation intrinsèque $\rho = \frac{1}{2}a\,(e^{s/a} + e^{-s/a})$, est la seule ligne dont le rayon de courbure soit égal au segment de la normale intercepté par deux droites fixes parallèles.

10725. (Professor Catalan.)—Soit, suivant la notation de M. Hermite,

$$P_n = \int_{-1}^{+1} \frac{Z_n - X_n}{z-x}\,dz, \text{ on a: } P_n = X_n\left\{2\int \frac{dx}{(x^2-1)\,X_n^2} + L\frac{x+1}{x-1}\right\}.$$

10774. (W. J. Greenstreet, M.A.)—Prove from statical considerations that $4\sqrt{2}\cos 27° = 5\cot 36°$.

10812. (R. Tucker, M.A.)—DEF is the pedal triangle of ABC. K_a, K_b, K_c are the S-points of AEF, BFD, CDE; through K_a, K_b, K_c parallels B'C', C'A', A'B' are drawn to the sides, cutting AC, AB in M, N'; BA, BC in N, L'; CB, CA in L, M'. Prove that ABC, A'B'C' are equal, with (K) S-point of ABC on centre of perspective; that LL'NN'MM' is the common cosine circle of the two triangles; that the two triangles have a common B-ellipse; and that the centroids of AMN', BNL', CLM' have K for their centroid. [Other properties will be found in Vol. xlv., p. 57; Vol. li., p. 61.]

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, April 14th, 1904.—Dr. E. W. Hobson, Vice-President, in the Chair.

The following papers were communicated:—

"On a Plane Quintic Curve": Prof. F. Morley.

"Note on a System of Linear Congruences": Rev. J. Cullen.

"The Tile Theorem": Dr. W. H. Young.

"Note in addition to a former paper on Conditionally Convergent Multiple Series": Mr. G. H. Hardy.

"On Functions generated by Linear Difference Equations of the First Order": Rev. E. W. Barnes.

"Mathematical Analysis of Wave-propagation in Isotropic Space of p Dimensions": Mr. T. H. Havelock.

"On Spherical Curves, Part II.": Mr. H. Hilton.

"Perpetuant Syzygies of Degree Four": Mr. P. W. Wood.

"Extension of Sylow's Theorem": Prof. G. A. Miller.

"Transformation of the Function $F([\alpha][\beta][\gamma]x)$" and "The Extension of Neumann's Addition Theorem for Bessel Functions": Rev. F. H. Jackson.

Informal communications were made as follows:—

"The Singularities of Functions determined by Taylor's Series": Mr. H. M. Macdonald.

"Behaviour of a Power Series near a Point on the Circle of Convergence at which the Series diverges": Dr. H. F. Baker.

"Transvectant Operators in connexion with Binary Forms": Mr. R. J. Dallas.

"Factorization of $13^{39}-1$": Lt.-Col. A. Cunningham.

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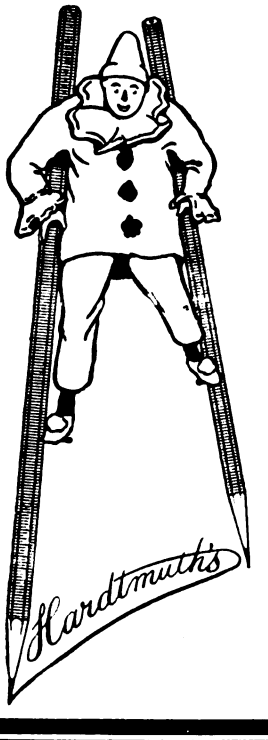

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The Educational Times.

The Private School.

"PRIVATE-SCHOOL teachers have still much to learn about the best way to reach the public ear." This is no dictum of ours, though we fancy it has much wider applications; it is the sorrowful remark of *Secondary Education* in the course of comment upon the Conference of the Private Schools' Association, which was held in the hall of Balliol College, Oxford, on April 13. We are afraid we did not ourselves contribute much to bring the Conference to the public ear last month, for reasons that need not be pressed; but we think it worth while, even at a late hour, to congratulate our contemporary on its probably unique good fortune in having secured and placed on record in its issue of May 7 a full account of the proceedings. We are glad, too, to learn that the Association numbers twice as many members now as it did four years ago, and six times as many as in 1891, the year of the successful meeting at Cambridge, and that the attendance at Oxford this year surpassed the most popular of all recent Easter gatherings. True, the ladies came up in greater force than the gentlemen; but the ladies, too, are teachers, their presence indicates a welcome interest and contributes a desirable impulse, and their keenness in educational matters sets an excellent example. So far well and good. Still, our contemporary's regretful remark should be borne in mind. The business man out West had the same situation in view when he advertised extravagantly: he sagely opined that "there's no use keepin' up a 'tarnal winkin' if nobody knows you're winkin'."

All the more important is the diffusion of knowledge of such conferences—of what is done at them, and of how it is done—in the present transitional period, when the position of the private schools is so widely supposed by private-school masters to be insecure, or at any rate in a measure doubtful. Yet one may easily scan the columns of the report and fail to carry away the impression that there is any gathering cloud overhead. Miss Wordsworth, the Principal of Lady Margaret Hall, just referred to the case of boarding schools, though apparently not to the specific difficulties raised by the new statutory organization of education. "Boarding schools," she is reported to have said, "no doubt have gone through a very bad time; but threatened men live long, and I think we see signs not only that they have not been above profiting by criticism, but that public opinion is veering round—to some extent, at least—in their direction." We believe this view is correct. The Vice-Chancellor of the University also made brief reference to the matter, putting his finger on the spot. "He thought that the Association would probably, in a great measure, be able to meet some of the dangers which they foresaw in the present day, and be able to temper the new principle of municipalized education." And Dr. Sibly, the President of the Association, made gallant and confident reply to Dr. Monro's cautious anticipation: "he knew that by the endeavours of the University they would succeed in spite of the dangers that at the present time menaced them." But, after all, there appears to have been no discussion of these dangers, or of the measures to be adopted in common with the view of meeting them successfully in case the menace should one day come nearer. One exception may be made, indeed: the concrete significance of Dr. Sibly's expectations from "the endeavours of the University" will appear presently. Apart from these indications—merely incidental indications they may be called—the Association went on courageously with their discussions as if the sky were all blue, and as if the education of the country depended upon their endeavours. The attitude is strikingly fine—if there be not in it some element of irony, not considered by Mr. Sidgwick in his interesting and scholarly address; and we trust there is not. Very likely the spectacle of simple-minded devotion to the cause of education is one of the best of prophylactics.

Dr. Sibly's hopes seem to be indicated mainly in the second and final clauses of the following resolutions and suggestions, which embody the relations that the Association desire to see maintained between private schools and the Universities:—

The Private Schools' Association assembled in Conference at Oxford on April 15, 1904, desire to express to the Universities of Oxford, Cambridge, and London—

1. A sense of the great value to secondary education of the stimulus given, and control exercised, by them through the Local Examinations.

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2. An earnest hope that the said Universities will resist any attempt by the State to supersede these examinations, or to exercise any form of control over them.

3. A belief that the value of these examinations might be greatly enhanced, and that certain evils incidental to them might be eliminated by such changes in their character as shall tend to make (1) the mere accumulation of information on any subject quite subordinate to the use of this subject as an instrument for developing the mind; (2) the examinations, as a whole, an instrument for saving the country from an exclusively utilitarian education, and for upholding as an essential object the development of higher tastes.

The Association begs respectfully to suggest the following measures as desirable to effectuate these purposes:—

1. That the questions set on any subject shall not be set by any one whose duty it will be to mark the answers.

2. That such a choice of questions shall be given in every paper as shall enable a candidate who has studied only part of a subject to satisfy the examiners, provided his answers show a thorough and intelligent appreciation of the subject.

3. That the University shall not allow so many sections to be taken by a candidate as to encourage an overcrowded curriculum.

4. That no certificate shall be awarded to any candidate who fails to satisfy the examiners in either English literature, natural science, music, or some other section or sections of a humanistic or æsthetic character.

The Association desires, further, to ask the Universities to discourage the transfer from secondary schools to the local Universities of students who have not attained a University standard.

Whatever may be the real expectations from the Universities, the resolutions, and notably the third, exhibit an elevated concern for the essentials of true education which is very honourable on the part of the Association. There would be no harm, however, in having another string or two to the bow of self-defence. For, after all, the private schools have to fight their own battle, if it is to be fought successfully.

There should really be no doubt about the issue. The ability and enthusiasm for education exhibited generally throughout the proceedings cannot but impress upon those that come to be aware of it—we introduce the qualification designedly—the high national value of the services of the conductors and teachers of private schools. These again can hardly fail to appreciate the importance of combination, not only within their own circle, but also with other circles of teachers whose general interests are in great measure coincident with theirs. The tendency to combination is taking practical form in various ways, and no doubt the leading spirits of the Association will see their advantage in joining hands with their educational friends in other departments of the profession.

NOTES.

The old friends and the many other admirers of the late Edward Thring, of Uppingham, will welcome the fine literary memorial of this strong man and great teacher which has just been published in sumptuous style by Messrs. Constable, under the editorship of his son, Mr. G. Herbert Thring: "The Agamemnon of Aeschylus, translated into English Verse" (10s. 6d. net). "To Edward Thring," his son tells us, "this translation was a labour of love extending over long years of an active militant life." To some, no doubt, "will come back the Old School Hall, where to the Upper VI., in solemn conclave assembled, he interpreted in nervous, forceful English prose the mighty thunderings of the grand Greek poet"—"no common lesson," but "the preaching of a great truth." Others, who have not enjoyed the privilege of his personal instruction, will be able in some degree to enter into the experience when they read this strenuous and vivid rendering of the great drama. It is at once evident how thoroughly the translator has appropriated and transmuted the words and the mind of the tragedian, and how patiently he has searched for the just form and expression. The blank verse is varied, sometimes even adventurous (unless one has studied the capacities of the measure), and always reaching out to the vigour and force of the original; and the choruses, if not touched with the fine literary art of one or two of our recent translators of Greek poetry, are yet managed with remarkable dexterity and effect. Here and there, as is all but inevitable, the restraint imposed by conditions of the undertaking is slightly obtruded; yet the general result is to convey to the Greekless English reader a strikingly effective presentation of one of the most powerful and least accessible examples of Greek literary achievement. It is just twenty years since Thring completed his final revision.

Elsewhere we notice a literal prose translation of the "Agamemnon" by Dr. Walter Headlam, which compares very favourably with other prose versions. Yet look on this picture and on that, and consider the meaning of the profound difference between the two presentations of the same materials. Clearly the student of Greek must patiently work along the lines of Dr. Headlam's translation; but surely he ought also to go on to follow the lines of Thring's transfusion. Is this process adopted regularly, or to any considerable extent, in the study of the classical authors? Or is it that the verse translation too often diverges so far from the original as to render comparison but little instructive to the student? We hear on all sides the growing clamour of the Philistine champions of the "useful" in school education, and the space for classical subjects is threatened with not a little contraction. No doubt, improvements in method and in procedure generally will avail to maintain classical studies at least at their present pitch of accomplishment for many a day yet. At the same time it seems advisable to cripple the force of the attack by bringing home irresistibly to non-classical readers the literary power of the masterpieces of Greek and Roman literature. We should hope, therefore, that translations such as Thring's (not to mention others) will come to find a place in purely English courses; for there is wide room for a diffusion of the classical spirit—diluted, of course, but still in no little degree efficient—among English readers that have no opportunity or desire to master the original languages, but yet have acquired or wish to acquire a familiarity with the best works in their own language, and would willingly extend their interest to foreign works presented in a really English form.

In a recent number of the *Week's Survey* (May 14), a teacher—obviously a teacher of experience and of progressive energy—discourses on the question of "quicker and more intelligent methods" of teaching Latin and Greek. "The difficulty," he says, "lies chiefly with the young beginner": "the long preliminary work at half-understood grammatical forms discourages many, and puts them hopelessly out of the running." Inevitably; and the first thing to be recog-

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nized is to have the pupil mentally abreast of his work, and to make him learn thoroughly, in its proper connexion, what he is set to learn. The writer sees this quite clearly; and, if all teachers could see it, one of the greatest obstacles to the maintenance of the classics would be summarily swept out of the way. He tells us that "pictures and models are becoming more and more popular," though there is "much truth" in the allegation that the illustrations in editions of the classics are distracting. Yes, distracting from the construing; but surely there is a ready cure for that. We do not know what is his authority for saying that "the deluge of annotated editions cannot be said to have improved English scholarship." Has it deteriorated English scholarship? Has it not facilitated English scholarship? It may be that the teacher is "the proper annotator," but the judicious annotator does part of the work of the teacher, and does it in a way that helps both teacher and pupil very effectively, while leaving quite enough work for both of them. It is certainly "good for a boy to feel his way and solve his own problems with the aid of dictionary and grammar," but such aids are very frequently inadequate, and it is very easy to waste time and interest in this "excellent training in research." Let us be yet a little more practical—in face of the enemy.

Sir Michael Foster does good service in the May number of the *Nineteenth Century* when he inquires whether the money expended by Government in grants for scientific work of one kind and another "is spent in the most economical way, and to the best advantage, either for the purposes of the Government or in the interests of science." The Government expects value for the money. The researcher, with his eye fixed on the achievement of this value—this concrete equivalent bargained for—is not free "to follow wherever the initial answers seem to beckon him": yet "experience has shown that absolute freedom to follow wherever Nature leads is the one thing needful to make an inquiry a truly fruitful one." "The cost of a 'fool's experiment,'" as Darwin called it (and he more than once found it profitable), "must not appear in the estimates laid before the public." How to reconcile the conflicting positions? Sir Michael takes the case of public health (in the widest sense), and he says:—

> What is needed is the endowment, and where necessary the establishment in London, and not in London only but in the provinces, of adequate laboratories, each supplied with a staff of investigators of various grades. The highest posts should carry emoluments large enough to tempt men of great eminence to hold them; the lower posts should be numerous enough and paid well enough to secure the needed number of promising younger investigators. Such institutions—and this is the point I wish to urge—would be most economically conducted and would prove most fruitful in scientific work, and so most useful to the public, if they belonged not to the Government alone, not to this or that University or other body alone, but to both together. . . . I am advocating the establishment of "Regius" Laboratories, with a new kind of "Regius" Professors, Directors, and other officers.

The full exposition of the plan is well worth attention, and is sure to attract serious consideration. It proposes system where there is now but fitfulness and irregularity, and would go far not only to ensure a better return for the money, but to advance the national achievement in all branches of studies. For, though Sir Michael deals directly only with public health, his principle extends to studies of every kind.

What is an examination for? "For the last two or three years," Sir R. K. Douglas is reported to have said (Royal Asiatic Society, May 11), "the post of Persian Librarian of the British Museum had been vacant, and, do what they would, the Trustees were unable to get a man to fill it with a knowledge of Persian who was able to satisfy the requirements of the Commissioners." "Who," observe; not "which." Now, really this is a piquant situation, and Prof. Browne, of Cambridge, throws a very much needed light upon it. He tells us (*Times*, May 13) that in 1900 one of the most brilliant of our younger English Orientalists—one whose reputation as an Arabic, Persian, and Turkish scholar was already established in England and on the Continent, who had an excellent knowledge of French, German, and Russian and a fair knowledge of Spanish and Italian, and who now holds an important and responsible educational post under the Indian Government"—actually submitted to examination for a post in the Oriental Manuscript Department of the Museum, and "was, to the amazement of all who knew his attainments, rejected by the examiners of the Civil Service Commissioners." And why? Because his Latin composition was not up to the mark! Prof. Browne mentions two other cases, in one of which the candidate also satisfied the examiners in Persian, but was rejected in German and Latin. He frankly says that all these candidates have, in his opinion, been "abominably treated." Whoever denies the proposition must have a peculiar notion of what constitutes fitness for the post. Here is one of the absurdities that tend to make the defence of classical study—and of examination—so painfully and unnecessarily difficult. The first man cited by Prof. Browne could easily have made himself first-class in Latin composition in a few months. To subject him to examination at all was an amazing red-tape idea, worthy of preservation in the Museum archives.

The best thing the Government could do with Coopers Hill is to shut it up. Inclusive of simple interest at 3 per cent. per annum on capital outlay, the deficit on the whole net working of the College is £170,643, and a further capital expenditure of some £40,000 is calculated to be soon necessary to keep it going. True, the cost to India is really a subordinate issue, but still it is an issue not to be disregarded in the position of the Indian Exchequer, or from the ordinary business point of view. What is the College there for? It was established to provide engineers for the Public Works Department, and this it has done so efficiently that the Government of India fancy they can never get so good engineers elsewhere, and plead for its continuance. This opinion, however, only shows that they do not appreciate the changed conditions of production of engineers, though these were put before them very plainly in the report of the Committee appointed by the Secretary of State for India to consider the expediency of maintaining the College. Replies to a circular addressed to fifteen Universities and other scientific institutions for the education of engineers show that "all the institutions consulted have expressed the opinion that there would be no difficulty in obtaining for India well qualified engineers from the United Kingdom, and the total number of candidates mentioned as likely to

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come forward is greatly in excess of any number of engineers that would be required." Besides, "the narrow field of selection to which Coopers Hill is restricted must exclude many of the best men from the Indian service." The recent limitations on the admission of natives of India take away the patriotic argument. The maintenance of the College would be a continued waste of money. The staff will, of course, be properly compensated on disbandment.

Mr. H. T. Butlin, the eminent Dean of the Faculty of Medicine of the University of London, has "yet to learn" the advantages that the University will derive from the "incorporation" of University College, and some other people have yet to learn the advantages that University College will derive from its "incorporation" with the University. Let us cheerfully hope that both parties will learn by and by. But, meantime, Mr. Butlin, as one of the treasurers of the Institute of the Medical Sciences Fund of the University of London, finds it necessary to explain that Sir Donald Currie's munificent gift, though "it has actually been acknowledged and accepted by the University of London," is "really a gift to University College, and not to the University of London," and anyhow does not go to swell his fund. For our own part, we are not sure that, although the gift "was actually acknowledged and accepted" by the College, the College will derive any direct and permanent benefit from it. Anyhow, it may be that the best argument for "incorporation" lies in this hopeless inability of the public, and even of "quite a large number of members" of Mr. Butlin's own intellectual profession, to make out which is which. Why, the highest University authority, apparently, is unequal to the discrimination; for, indeed, Sir Donald's gift was "actually acknowledged and accepted by the University of London."

A correspondent writes:—"Considering the proportion of private schools to be found among the secondary schools of England, it is but natural that the strongest representations should have been made from time to time to Governments, both Liberal and Conservative, with regard to the exclusion of private teachers from such bodies as the Consultative Council. They manage these things differently in Norway. The proportion of private schools there is hardly as great as in this country; but the representation of such schools in their Secondary School Commission, which sat about the same time as our own, was five times as great as in England. And the Consultative Council, which was brought into existence by the new school law and whose members are appointed for five years at a time, is not regarded as complete without a private-school element. The Council consists of seven members, one of whom was chief assistant in the leading private school in Christiania, known by the name of Aars and Voss. He has been replaced this spring by Mr. Otto Anderssen, who more than twenty years ago was also with Aars and Voss, but has since that time been the head master of a private State-recognized school of 400 boys in the same neighbourhood. It was he who wrote the account of the new Norwegian School Law in Vol. VIII. of our Special Reports. Mr. Anderssen is a very capable English scholar, and has written for school use a 'History of English Literature' (in English) which is admirable for the selection of its matter, the brightness of its style, and the general justice of its estimates."

SUMMARY OF THE MONTH.

The King laid the foundation stone of the new buildings of the Royal College of Science, Ireland, at Leinster Lawn, Dublin (April 28). Sir Horace Plunkett, Vice-President of the Department of Agriculture and Technical Instruction, Ireland, read an address reviewing the work of the Department, and laying special stress on the work of the Royal College of Science and the importance of a complete system of national education. The King, having expressed his pleasure in performing the ceremony, said:

In these days scientific training is an indispensable condition of success in commercial and industrial life. To be thoroughly effective, it requires all the help which research and modern appliances can give. You are, therefore, wise in providing the improved equipment and the widened opportunity for instruction which this college will henceforth supply. You have told me that the efforts of your Department to extend scientific education among the people have been supported by popular sympathy and by the co-operation of representative public bodies. I am glad to receive this assurance; for without such sympathy and co-operation any scheme of technical instruction, however well devised, must fail to come into close touch with the life of the people, and must fall short of complete success. I agree with you in thinking that a complete system of education is necessary for the full realization of your aims; and my best wishes go with your efforts to improve the intellectual and material conditions of the country.

At a later stage of his Irish visit—at Kilkenny—the King again emphasized the value of education for the development of the country.

The International Printing and Allied Trades Exhibition at the Agricultural Hall, Islington (April 30 to May 14) was a great and instructive show of machinery, appliances, processes, and products. There were over three hundred exhibitors, representing almost every branch of the industry, and very few of the leading houses were absent. Some five hundred different modern and up-to-date machines and appliances were exhibited, about one hundred of them being shown in operation. Interesting historical examples were also to be seen in the gallery. The exhibition impressed at once the extent and the efficiency of modern developments.

The system of technical instruction for fishermen devised by the Lancashire County Council is said to be much appreciated by the fishermen along the Lancashire coast. The County Council has arranged for batches of fifteen fishermen at a time to attend at the Piel (Barrow) Hatchery and Marine Laboratory to be instructed in the habits and conditions of breeding of various kinds of fish. The course lasts a fortnight, during which time the fishermen reside at Piel. The County Council allows each man £5 towards his expenses. According to Prof. W. A. Herdman's syllabus of the lessons in marine biology given in these practical classes, the fishermen, after an introductory course, dissect and study the mussel, shrimp, crab, cockle, oyster, and fish parasites, and become acquainted with the leading facts about the breeding of these and other forms of life.

At the Glasgow School Board (May 16) a prolonged discussion took place over a motion proposed by the Rev. Mr. Forson that, in future, candidates for appointments should not be required to state the Church denomination they were connected with. Mr. Forson said that many teachers left a church of a smaller denomination to become attached to one of a large denomination. Mr. Martin Haddow, who seconded, said no matter to what church a teacher belonged it was no criterion of his character. They knew many men who belonged to no church, but were of good, sound character, both morally and otherwise. Miss Paterson moved the previous question. She pointed out that if teachers were to teach religion in the schools they ought to know that they had some church connexion. In these non-church-going days she thought it was very essential that the teachers should be able to say to the Board that they attended some church. The motion was carried by 4 votes to 3.

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"Russia's failure is mainly from the inefficiency of Alexeieff and Stark in the days of peace: how many admirals have we who would have done better?" asks Mr. Fred. T. Jane in the May number of the *World's Work*. "Here is an instance in our Navy of how we get Starks instead of Togos. Some ten years ago one of the most brilliant officers in the Navy was detached to the Mediterranean, where he had the misfortune to arouse the jealousy or ire of a titled superior of the Stark calibre, and from that day he passed into obscurity—snuffed out. The same thing still goes on. Jealous mediocrities, retired and on the active list, work night and day to oust Admiral Fisher. To take another case, Captain Percy Scott is extremely likely to be snuffed out ere long. I do not know that he would necessarily make a supremely good admiral, but there is no doubt whatever that he has doubled, if not trebled, the gunnery efficiency of the fleet, and officers of the Stark type shake with jealousy in consequence. Such things should not be; the Navy needs the best men always, and the most urgent lesson of the war is that, unless we ensure getting the best men, heedless of sentiment and 'prior claims,' we, like Russia, may find a day when we send our Makaroffs and Skrydloffs too late." The case has wider applications.

Yet another relic of bygone London will have disappeared within the next few days (says the *City Press*, May 14). Already the housebreakers are at work behind the Minories, in connexion with the street widening scheme about to be carried out in that district. Among the houses that will be rased to the ground is one possessing not a little interest—especially to Churchmen. On the west of the Royal Mint, and exactly adjoining the entrance, are the premises which will be demolished first, and these include the first Protestant parish school erected in London. A casual observer would fail to observe any difference between the school and its neighbours, especially now that they are in the hands of the workmen; but about fifteen feet up, let into the wall, there is a slab bearing the following inscription:—"St. Botolph, Aldgate. First Protestant Parish School. Erected by Voluntary Contributions, 1793." Yesterday this evidence of the Church's early labours in the cause of education remained intact. By now, possibly, it is amongst the *débris*, the building itself having passed away, unthought of and unmourned.

Mr. Hilaire Belloc writes in *London Opinion*:

Get Church's stories from Homer. When you have read it (or as you read it) go to the British Museum and look closely at the archaic Greek sculpture—at the stiffness, and the astonishing realism of it, and at the fixed smile which some have thought cruel, others merely ritual. Catch the rhythm of this little book. Read twice or thrice the fainting of Andromache when she sees Hector dead; read, indeed, the whole most carefully. If you are lucky, there will happen to you what happened to me when I first read this book. The river you know best will be Scamander, and the war that dinned round Ilium will be fought in the road next your home, for, believe me, when I was a boy the sacred cities stood upon the foothills of the Downs, and the sea-plain held the camp of the Greeks, and Arun was Xanthus, and the Wight, a long way of, was Tenedos.

This way of bringing the spirit of the classics to touch the non-classical mind is daily gaining in importance,

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Principal Reichel lectured to the Guild of Graduates of the University of Wales at Holyhead on "Some Interesting Features of American Universities" (May 12). He said that the Universities of America were far more numerous than ours, and they altogether surpassed ours in wealth, in equipment, in number of staff and students, in variety of study, and, above all, in the hold they possessed on the public confidence. The student there obtained his degree on the regular work he did throughout his University course, and, though there was a test at the end, it hardly ever took the form of a competitive examination in all he had been studying for two or three years. Often it was a thesis. The effect of this on the course of study was very marked. In America, English literature was the core subject in the schools, and to a large extent in the colleges. Our schools too often turned out their pupils with a positive distaste for reading good literature. The young American might not have learnt so many facts at school as the young Englishman, but in nine cases out of ten he had acquired not only a liking for literature, but some idea how to use the splendid public libraries which were maintained in every American city. In the matter of physical culture the Americans were, generally speaking, ahead of us: but the mischievous tendency to convert football, cricket, and other games into spectacular performances was quite as apparent in the United States as in Great Britain; and it was more aggravated by the American keenness to win, which tended to import into the football field regrettable practices. Taking all things together, however, he had no doubt that we had much to learn from the Americans in the matter of physical culture. The most admirable feature of the other side of the Atlantic, whether in the United States or in Canada, was the entire absence of any feeling that honest work of any kind could be derogatory to an educated man. The American or Canadian student whose friends could not afford to keep him at college paid his way either by working during the Long Vacation in all sorts of manual employment or by rendering what we should regard as menial services to his fellow-students during term-time.

At a meeting of gentlemen interested in technical education, held at the University of Birmingham (May 14), Prof. Heath, Vice-Principal, in the chair, the present state of technical education in the Midlands was reviewed, and the following resolutions were adopted:—

1. That an Association be formed of representatives of technical education in the Midland district, with the object of promoting consultation and collaboration amongst teachers, and of promoting the interests of technical education generally.
2. That the following be appointed as a Committee to organize such an Association, and to report to a future conference:—Mr. G. P. Bailey, Mr. F. W. Shurlock, Dr. W. E. Sumpner, Mr. Lloyd Whiteley, Alderman Bourne, Alderman Yates, and Profs. Hughes, Redmayne, and Turner.
3. That this meeting is strongly in favour of a reorganization and extension of evening continuation classes in order to fill the gap between elementary and technical education.
4. That this meeting believes that great benefit would result if manufacturers would encourage and facilitate the regular attendance of their employees at day and evening classes in technical schools.

Dr. A. W. Williamson, F.R.S., Emeritus Professor of Chemistry in University College, London, died at Hindhead, in his eighty-first year. He was appointed Professor of Practical Chemistry as far back as 1849, and was made Professor of Chemistry in 1855. He retired in 1887. His widow is a daughter of the late Prof. T. Hewitt Key.

The Council of University College, London, adopted the following resolution:—"The death of Dr. Alexander W. Williamson, Emeritus Professor and formerly for thirty-nine years Professor of Chemistry and Practical Chemistry in the College, having been reported to them, the Council record their sense of the great value of his service to the College during many years and of the distinction which his great eminence as a chemist and man of science conferred upon it. They lose in him a link with the earnest band of social and educational reformers to whose efforts the foundation of the College is due."

On the much-regretted death of Sir Henry Thompson the Council of University College, London, adopted the following resolution:—"The Council have received with much regret the information of the death of Sir Henry Thompson, Bart., Fellow of the College, Emeritus Professor of Clinical Surgery, and Consulting Surgeon to the Hospital. Sir Henry Thompson was not only a brilliant surgeon, but also attained notable distinction in other branches of science and in art. He rendered great services to the College and Hospital during the twenty years of his membership of the active staff, and as Professor of Clinical Surgery from 1866 till 1875 he was a most impressive and successful teacher. To the end of a long life he strove continuously to improve the social condition and sanitary welfare of the public. The Council desire to express their sympathy with Lady Thompson and other members of the family."

Prof. York Powell, M.A., LL.D., Regius Professor of Modern History in the University of Oxford, died somewhat suddenly (May 8), at the early age of fifty-four. He succeeded Mr. Froude in 1894. His chief interest lay in the earlier periods of English history, on which he wrote several well known volumes. He did excellent work in Icelandic literature by editing, in conjunction with Gudbrand Vigfusson, the "Corpus Poeticum Boreale," in two volumes (1883). He also took an active part in the general affairs of the University.

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UNIVERSITIES.

(*From our own Correspondent.*)

Oxford.

We have had a term, so far, which could in no sense be said to be devoid of interest. When Congregation—*i.e.*, resident opinion—decided last term by a very substantial majority—a majority which included some of the leading theological authorities and teachers in the University—that it was expedient that others than those in priest's orders should be admitted as examiners in the Final Honour School of Theology, one could scarcely believe that outside voters would reverse by a colossal majority the decision of Congregation. But the opponents of the change at once set to work to canvass the non-resident clerics whose names are still on the Convocation list. The result was a wholesale invasion of Oxford: the Great Western Station was crammed with parsons from all parts of England, and many parishes must have been left unshepherded. Many of the visitors seemed to have stepped out of the last century: many others made business the opportunity for a holiday, and had brought up wives or families whom they conducted over the colleges. It was almost pathetic to see the greetings between those who presumably had not met since undergraduate days, and whose ecclesiastical paths and preferment had—to judge from the cut of their clothes—been widely different.

The debate itself had little dignity: the voters had come to vote and not to listen, much less to be convinced. The earlier discussion in Congregation had been refreshingly free from acrimony or the proverbial *odium theologicum:* the different standpoints had been put clearly and judicially. So—but for the audience—might have been the Convocation debate: but, as a matter of fact, the scene might have been a black-coated reproduction of a noisy Commemoration. The names of distinguished divines—not in Anglican orders—were even received with something closely allied to Australian "barracking." Altogether, though the invaders swept all before them, the manner in which they did so could hardly have been considered either dignified or acceptable. Indeed, the whole occurrence has raised the question—which has been raised before—whether in matters which are more properly the internal business of the University, a deliberate decision of residents should be at the mercy of a *plébiscite.* Had the resident verdict been less decisive, then its reversal by the non-resident vote might have seemed more equitable; as it is, we are faced by the position that the University—in the sense of the resident teaching University—can hardly be said to be able to legislate for itself.

Of Prof. York Powell so much has been written that little may seem remaining; but it would be impossible in an Oxford letter to omit the mention of one who was in an especially distinctive sense an Oxford man. There have been historians who have written more: there have been few who have known more. There is a good deal of truth in the remark that he gave to the University Press and to writers on historical subjects a critical knowledge of which he might have made a more selfish, and perhaps more profitable, use. It is a matter of common knowledge to those who know the working of the University Press that enormous importance was rightly attached to York Powell's advice and decisions. An author on a special subject might submit or suggest a work to the Delegates: if his suggestions were looked upon with favour, he was in most cases referred to York Powell. Possibly he might at first fight shy of criticism, feeling that he was in himself a special authority; but after his first interview he speedily realized that on all historical knowledge York Powell might have himself been a specialist, and he was only too ready afterwards to avail himself of felicitous suggestion, shrewd and unerring, if somewhat blunt, criticism and unfailing stores of knowledge.

Of the Professor's successor it is yet early to speak—though, of course, we do speak. Probably Firth is the favourite selection, though it can hardly be said that his books have been read by many, and although, if you mention his name to "the man in the street," he only associates it with the monograph on Cromwell. Yet Firth it will probably be. The Oxford History School teachers—"The History Ring," as it is called by its critics—is the best organized system in Oxford, and contains many able men; but none, perhaps, stand out pre-eminent. Richard Lodge has, of course, left us for Edinburgh: but we still have, among the older names, Lionel Smith, of Balliol; Arthur Johnson, of All Souls and Merton; Hassall, of Christ Church; Fletcher, of Magdalen; Oman, of All Souls—yet perhaps of these it can hardly be said that one star differeth from another in glory, though Oman's work is perhaps better known outside Oxford. Of the younger school it may probably be said, without hurting anyone's feelings, that Fisher, of New College, has made most mark and will go farthest; but perhaps his time has not yet come.

Prof. Bradley's lectures as Professor of Poetry continue to be extraordinarily popular; they have certainly been at once remarkable in themselves and characteristic of the man. One of the largest gatherings in the Schools which your correspondent has ever seen was present to hear the lecture on "Shelley"; while the most recent lectures, on "King Lear" and "Macbeth"—coinciding in date, as they have, with the Eights Week, and fixed at a convenient hour—have given, alike to sober resident and gay "ephemerid," an opportunity of combining instruction with the more serious business of Eights Week.

Of the Eights it may be said that the boats are not especially good; but the racing has been most entertaining. New College accomplished a remarkable performance, as their crew was sadly upset, both just before the races and during the races themselves, by illness; on the fifth night they felt themselves doomed, as their stroke collapsed, and their former stroke (out of the boat by doctor's orders) came back to save the situation, and rowed with marvellous pluck and success. Christ Church have had the fastest crew, and, starting sixth, made three bumps in three nights; they then found Magdalen a crew which, as always, take a great deal of catching. There should be fine racing between the two at Henley if Christ Church go for the "Ladies'," which Magdalen hold as winners last year.

The University Eleven has done quite well, but they really want some more batting: at present we are mainly dependent on Evans and Raphael—the latter of whom is certainly the "man of the hour," as in the latter part of his great innings against Yorkshire he made Hirst, Rhodes, and Haigh appear very ordinary bowlers.

(*From our own Correspondent.*)

Cambridge.

The death of Mr. G. F. Cobb came as a shock to many of us who for years have looked upon him as a type of perpetual youth. A more vigorous and many-sided man it would be hard to find in Cambridge or elsewhere; twenty-five years of unremitting work as Junior Bursar of Trinity were quite unable to check his energies, physical or mental. His book "The Kiss of Peace" showed him to be an acute controversialist and a learned theologian; his attainments as a musician were far above those of the ordinary professional—as an organist he was at his best when giving exquisite renderings of classical music on the organ of his college chapel, while who does not know his ever popular rendering of Kipling's "On the Road to Mandalay"? Yet as a founder of the Cyclists' Tourist Club, and as a tactful and courteous administrator of a great college like Trinity, he was as accurate and painstaking in the daily details of business as he was cultured and judicial in higher realms of work. If Cecil Rhodes and Gerard Cobb had met, Cambridge might have possessed some Rhodes scholars to-day.

The partnership which the University has for so long carried on in conjunction with the Clay family at the Pitt Press is not to be terminated just yet: certain changes are made in the publishing department, but Mr. John Clay will still be a managing partner in the concern which has been such a useful source of income to the University for the past twenty years. The opposition to the continuance of the partnership was represented by about sixteen votes in the Senate, and there is little chance of the existing arrangement being disturbed for many years to come.

Mr. Frank Smart has once more shown his liberality by endowing a research scholarship in Botany. It is impossible to overestimate the importance of such generosity: in no case have the holders of such studentships failed to justify the choice of the electors. The research work of our graduate students is the very best antidote to the banality of our Tripos system. The Girdlers' Company have also given us a Lectureship in Economics: they would have been better advised if they had created a studentship of the type alluded to above.

Proposals are now being made to modify the procedure in the election to certain professorships. The Council of the Senate at present are charged with the selection of the Regius Professors of Greek, Divinity, and Hebrew; while the Norrisian Professor of Divinity is elected by the Heads of Houses, who, quite possibly under modern regulations, may be profoundly ignorant of theology altogether. The scheme roughly is to create boards of nine members—the Vice-Chancellor, four mem-

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bers nominated by the Council, two by the General Board of Studies, and two by the Special Boards concerned. In the case of the Lady Margaret Professor, who is at present elected by the Divinity graduates, it is proposed that the board shall be elected by the Divinity Faculty. The proposals will probably be carried.

After a quarter of a century's solid work in the University Laboratory, Mr. Fenton and Mr. Sell are to be rewarded by being appointed University Lecturers in Chemistry at a nominal salary of £50 a year: of course, the real emoluments of these posts come from fees, but the honour is as well deserved and as much appreciated as what would have cost us more.

The grand field day in the Senate on May 28 will be a matter of history before these notes see the light; scientists from the four quarters of the globe—and elsewhere, judging by their names—are to be offered the D.Sc. degree. Russia sends us M. Famintsyn; Germany, Herr Waldeyer, the anatomist; while the great Swedish anatomist M. Retzius will keep him company. Astronomy will be represented by Prof. Bakhuyzen, of Amsterdam; Physics, by Prof. Riecke, of Göttingen. Literary merit will be rewarded by the degree of Doctor of Letters in the person of M. Leroy-Beaulieu, Professor of Political Economy in the Collège de France; Prof. Krumbacher, Professor of Philology at Munich; and M. Georges Perrot, Director of the Ecole Normale Supérieure of Paris. It is to be hoped that they will understand the orations of our distinguished Public Orator, who may possibly, for this occasion only, adopt the pronunciation current on the Continent.

The appointment of Mr. Donaldson to the Mastership of Magdalene came rather as a surprise to the University. Eton men commend it warmly; and they ought to know.

The two great itinerant political clubs have both paid us a visit: the Liberals treated us to Mr. Haldane and the Unionists to Mr. Alfred Lyttelton. Naturally, the dinner to so well known and popular a sportsman as the present Colonial Secretary was well attended, both by Seniors and Juniors, and the guest of the evening had an enthusiastic reception.

The examinations are now well upon us, and until the middle of June lists will spasmodically make their appearance. Little-go candidates do not face the examiners till June 21, and have to do the last fortnight of their preparation amid the din and bustle of the "May Week" gaieties. Could any arrangement be more idiotic? Every one regrets the good old days when the Triposes were held in the October term. But the present arrangement suits the convenience of some of our officials; the candidates suffer.

The river is gay with the practising boats and irresponsible idlers. Third Trinity promise to retain the headship of the river; but Trinity Hall and First Trinity are exceptionally strong crews, and will make the racing exciting.

Our Eleven is not as bad as the papers think. Several of last year's untried men have proved their worth quite early in the season.

The Tripos men take their degree on June 22; then all will be over.

London. At an ordinary general meeting of Convocation (May 10), Sir Edward H. Busk, M.A., LL.B., was re-elected Chairman—a position he has held for twelve years past. Mr. T. Lambert Mears, LL.D., M.A., was elected Deputy-Chairman, in room of Sir Philip Magnus, to whom a vote of thanks was cordially passed for his services. In responding, Sir Philip remarked on the increasing weight of the work of the Senate, and especially in satisfying conditions attached to gifts to the University. For the rest, the meeting dealt with routine business.

Manchester. The University Court passed (May 5) Ordinances for the new Faculty of Commerce and Administration, and for the new Faculty of Theology. Regulations for granting a diploma in Veterinary State Medicine and for degrees in Public Health and Pharmaceutics were also adopted. Principal Hopkinson reported that the Joint Board representing the three Universities in the conduct of the Entrance or Matriculation Examinations was working satisfactorily. The Bill for merging Owens College into the Manchester University was now only awaiting the Royal Assent, and they now felt that their new organization was complete and in working order.

Birmingham. A summer school in mining, geology, and civil engineering has been arranged for the ensuing vacation, under the control of Prof. Redmayne, Prof. Watts, and Mr. F. H. Hummel.

The Council have rejected a petition praying them not to permit any one to perform experiments or enter the licensed laboratory who holds a certificate issued to him under the Act (1876) exempting him, partially or entirely, from the use of anæsthetics. While sympathizing with the humane intentions of the memorialists, the Council point out "that the certificate permitting a test to be made without an anæsthetic is intended for inoculation or feeding experiments, where the administration of an anæsthetic is wholly superfluous or impossible, and in any case would subject the animal to much more discomfort than the trivial puncture or scratch itself. The certificate is not asked for other experiments. With the exception of these feeding and inoculation experiments, permission to retain the animal alive after an operation is rarely asked, and is only permitted when a special certificate has been granted for the particular experiment. . . . The Medical Faculty has reported that so far no such special certificate has been applied for, nor will any be applied for unless the Faculty itself has come to the conclusion that in the particular case the object in view is of great importance. The Council accepts this assurance, and, having received a report upon the whole matter from the Senate, is of opinion that it is not necessary to impose any other conditions than the very stringent regulations laid down in the Act of Parliament and most fully carried out." The Hon. Stephen Coleridge says the reply will certainly fail to satisfy the signatories to the petition.

A Committee is endeavouring to raise £480 a year for three years, and an installation fund of £700, for the establishment of a Hall of Residence for women students.

Leeds. The Court of the University of Leeds held their first meeting (May 18), the Marquis of Ripon presiding. Lord Ripon, as the first Chancellor, said the duties which fell to them were of the very highest public importance. A University was not a technical college, though he did not speak lightly of technical education, as he believed that one of the foremost things which should be done for the maintenance of our industries and manufactures in the face of foreign competition was the spread of sound and high technical education. The object of their work should be a modern University on modern lines.

Wales. At a meeting of the Wales University Court (May 13), Sir Isambard Owen raised the question of petitioning for a supplemental Charter, which should include provision for enabling the University to grant degrees in Medicine, Surgery, and Obstetrics. A letter from Sir Arthur Bigge, Private Secretary to the Prince of Wales, Chancellor of the University, was read, expressing His Royal Highness's approval of including the power of granting degrees in Medicine in the petition for the supplemental Charter. Sir John Williams strongly supported the proposal, and stated that students from Welsh medical schools take distinguished places in the graduation lists of other Universities, while the Welsh University is deprived of her natural credit. The Court resolved to include this provision in the application for a supplemental Charter. The Senate was instructed to report on the inclusion of a conversational knowledge of French and German and of commercial geography among Matriculation subjects as necessary to maintain the nation's commercial progress.

Edinburgh. The special Committee appointed by the General Council of Edinburgh University to "watch the progress" of the Education (Scotland) Bill now before Parliament, and "to take any steps that may be necessary in the interests of the University," have forwarded to the Secretary for Scotland resolutions expressing approval of the Bill; noting with special satisfaction the proposed institution of Provincial Councils, whereby the Central Authority may be brought into communication with the opinion of Scotland and the Universities may take part in guiding the education of the country; and suggesting that, as regards the representation of the Universities on these Councils, it is matter for consideration whether the University Court should not be the electing body.

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Glasgow.

THE Glasgow St. Andrew Society, which has decided to wind up its affairs, has offered the balance of its funds to the Senatus of Glasgow University for the encouragement of Scottish literature by means of bursaries, lectureships, or such other method as the University Court may determine. The Court (May 5) agreed to request that the funds in question might be devoted to the Celtic Lectureship, for which subscriptions are at present being collected.

Aberdeen.

THE University Court approved a scheme of post-graduate training of secondary teachers (May 10):

1. The course of training is open only to graduates of this and other Universities, and to those who have otherwise satisfied the Senatus of their fitness to profit by the training.

2. Every student must have taken the class either of Logic or of Moral Philosophy during his undergraduate studies; failing which he shall take it concurrently with this course.

3. The course of training shall extend over one year, commencing with the summer session.

4. The course of instruction will be theoretical and practical—100 hours of lectures, discussions, essays, reports, &c., and 250 hours of practice in the schools.

The Court resolved to proceed with the institution of a draft Ordinance for the degree of Doctor of Science in Agriculture (D.Sc.Agr.), which had been approved by the General Council.

St. Andrews—University College, Dundee.

AT a special meeting (May 11) the Governors of University College, Dundee, unanimously confirmed a resolution passed at a previous meeting empowering the Council to borrow £10,000 for the purchase of land at Union Mount for purposes of extension.

Lack of funds prevents the Council from taking up the proposal of a Chair of Agriculture for Forfarshire in connexion with the College.

UNIVERSITY EXTENSION.

IS IT A SUCCESS OR A FAILURE?

MR. HAROLD SPENDER writes in the *Manchester Guardian* (May 11):

Is the University Extension Movement a success or a failure? That is the question naturally suggested by the news that the Victoria University propose to enlarge the area of their Extension work in the districts round Manchester. Perhaps, as an old Extension lecturer who has long retired from the service, I may be allowed to say a word on the subject.

Since its enthusiastic beginnings the Extension Movement has been peculiarly at the mercy of random and ignorant opinions. It has been the favourite cock-shy of the superior persons in University common-rooms and elsewhere, and it has been the over-praised idol of the neophytes of knowledge whose draughts from the Pierian spring are rather frequent and various than deep. Amid the Babel of praise and blame, of ignorant contempt and fulsome worship, the true aim and merit of the Extension Movement is in danger of being forgotten.

Both parties make the same error. They mistake University Extension teaching for University teaching in the fullest sense. Starting from this point, the University don is perfectly right in denying the claim of Extension teaching to take the place of what we aim at in University teaching. I say what we aim at, for in reality Extension teaching, with its higher standard of lecturing and its stimulating atmosphere of faith, often achieves more than the University itself. The sister who attends at the Extension lectures often works harder and learns more than the brother who attends college wines and learns how to "cut" "pass" lectures. But of course there is no comparison between the effects of a few courses of variegated lectures and a steady and continuous training of three or four years under the best University teachers. The wise founders of Extension teaching never confused the two things, nor imagined that the University Extension Centre would take the place of a University. To them the University Extension lecturers were the scouts of the main army—the itinerant missionaries who prepared the way.

The University Extension Movement, therefore, is essentially a pioneer, and, in a sense, an experimental endeavour. In some towns of England it has already laid the foundations of new Universities; in others it has flickered out and expired. Reading and Exeter are two instances of towns which have witnessed the development of an Extension Centre into an Extension College, and finally into a full-blown University. In other towns the Centres have led to the formation of local institutes and societies, which still keep the flame alight. In both these cases the Extension Movement has only ceased because it has succeeded. It has created an intellectual centre which has become self-sufficient and requires no help from without.

There are too many other cases, indeed, where the Movement has died out without leaving any permanent fruit. In each case I leave it for the local world to decide which is to blame—the town or the Movement. But even where the Extension enthusiasm has become an extinct volcano we need not conclude that it has been a failure. On closer inquiry in any of these towns or villages we should probably find that there were many men and women of middle age who had learned from this Movement to love books and talk about books more than about their neighbours. Wherever a Centre has left one such person its work has not been entirely vain. There are many women in the towns and villages of England to-day who make better wives and mothers because of the Extension Movement. We do not want to breed students only, but good citizens.

The first Extension lecturers aimed chiefly at educating the working classes, and there are many who blame the Movement because it has not kept steadily to this ideal. But the middle classes stand in need of culture quite as much as the working classes. There is no need to narrow the Extension Movement down to a class—or a "mass"—movement. Its glory is that it comprehends all men and women. It is good for an Extension lecturer to address a big audience of working men one day and a little gathering of ardent ladies on the next. There are no better audiences for an Extension lecturer than the working-class audiences of towns like Manchester. But some of the best students I have ever known have been young men and women in places like Garstang and Lytham. A course of lectures on literature may lend a new meaning and purpose to life; half-a-dozen lectures on architecture may add a new value to travels; a course on modern history or modern science will make women better companions to their brothers or husbands. They will even be better housekeepers, and will order a better dinner, because they have better brains to do it with.

The later directors of the Extension Movement have made many efforts to make the courses of study more continuous and more thorough. The class after the lecture, the local association for study and discussion in the intervals of lectures, the essay, and the final examination—all these are admirable developments as long as they are not pressed too strenuously and pedantically. It is a mistake to exclude the more casual student. An Extension lecturer ought to be catholic—he ought to bear in mind both his students and his listeners. There is room for both. It is possible to stretch too far the ideal of continuous courses. There is a place for the six-lecture course as well as the twelve-lecture course, and, if you cannot persuade a town to study history for two years in succession, it it better to let them have their turn at modern science than that they should give up the Movement altogether. Here again we must remember that the Extension Movement is always a movement of test and trial.

With the growth of great provincial Universities, Oxford and Cambridge will be able to hand over some of the burden to their younger sisters. London University has always claimed the sphere of London. There is no reason why Victoria University should not do the work for Lancashire, and Leeds College for Yorkshire. With these Universities, the Extension Centres ought to be feeding agencies for the main corporation, and the lecturers ought to be more awake to local needs. The work of the Extension Movement in England will only be completed when there is a University accessible to every boy and girl in the kingdom. Until that ideal is achieved the Extension lecturer holds a high place among teachers. He is the sower of the seed.

UNIVERSITY EDUCATION IN INDIA.

1. THE UNIVERSITIES BILL.

THE Government Bill for the reconstitution of the University of India has undergone wide and severe Native criticism. Thus the Hon. Mr. Mehta, speaking at a meeting of the Bombay University Senate on December 21, dealt stringently with Mr. Raleigh's speech in introducing the Bill, affirming that "it only deals in assumptions without grappling with the detailed arguments derived from actual experience," and pointed out Lord Curzon's "utter misconstruction" of the attitude and motives of Native objectors. In particular, he criticized the inclusion of all the Universities in a single Bill; and, referring to Lord Curzon's advice to dismiss "all the wild talk about killing higher education and putting education under the heels of the Government," which he accepted as "entirely honest and sincere," he pointed out that they would have to deal with subsequent Viceroys, and said:

We have, therefore, to look—it is our duty to look—both behind and before. We know that in the past, not the killing, but the clipping, of

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higher education has not been beyond the pale of political contemplation in the highest quarters. [Reference to the Government policy of 1890–91, as expressed by Sir W. Lee Warner and Sir Charles Crosthwaite.] . . . It is thus looking before and behind that we are alarmed at what is the aim, and will certainly be the result, if this Bill is passed, of making the University a department of Government. To really realize the drift and scope of the Bill you must take it as a whole, and not piecemeal as some of my colleagues on the Committee have done. Section 3 provides that the exercise of all and every function vested in the University shall be subject to the approval of Government. If the University has to make an appointment, it must be subject to that same approval. The composition of the Senate, under Sections 4, 5, and 6, is practically in the hands of Government. By the limitation of the number of Fellows to 100 even the hands of Government are tied so as to leave them very little discretion but to make it preponderatingly European and official. Under Sections 19–24, affiliation and disaffiliation are made direct acts of Government, the Senate and Syndicate only submitting to Government their inquiries and opinion. Under Sections 25–26, the by-laws and regulations are absolutely placed at the mercy of Government, who have power to add and alter the draft by-laws prepared by the Senate as they choose. This is all the Bill. Whether the Universities will be made teaching Universities, as is so often insisted on, is a nebulous problem left to Providence in the dim future. What is certain is that a clean sweep is made of the integrity and independence of the Senates, which have been such valuable factors of healthy growth in the past.

On the other hand, the Rev. Dr. Miller, speaking on College Day at the Christian College, Madras (December 29), said:

In his opinion the Universities Bill would be mainly for the good of the public. He undoubtedly did not regard the proposal as by any means perfect. It was a great blot upon the present Bill that it should practically be expected that under it all the influence of the public open to the University should be thrown into the hands, with scarcely one exception, of those who followed the profession of teaching and the profession of law. It was eminently desirable that all educated opinion should have its influence upon the life of the University; and he rejoiced to know that there was a movement among them for an amendment so that all well educated men might give their weight and influence in the ordinary University affairs. . . . No doubt a great deal would depend upon the way in which the measure was worked out hereafter in detail; and he fully admitted that the practical working out of the systems and the plans laid down in 1854 and 1882 were marred in many ways by a narrow conception of their duties on the part of those who mainly worked them out in practice. It might be so in the present measure too; but, in spite of all the narrowness, it could not be denied that in the past two eras the benefits that had been conferred upon the public had been enormous. In the present Bill there might be errors in the detail of working, but the plan as a whole should do great good. The outcry against the Bill came from those places where reform was most needed, and in that outcry all the attention had been given to subsidiary matters and little or none to the one great central benefit which the measure was intended to bestow, viz., that it gave a centre of gravity to University life by gathering the highest kind of education in one centre and putting it in the hands of the University itself. That was the very thing that their old style of education at the present time needed.

Our young and energetic contemporary *Indian Education* naturally leaves on one side the political issues, and is more concerned with the question: "What view should teacher stake of the Bill?"

We think they should all welcome a measure that offers them a real voice in University affairs. It may, indeed, be contended that teachers as such are not united by any common sentiment: Hindus, Catholics, and Protestants, they are all pursuing different ideals, and have no reason to wish success to each other. There is truth in this contention; and the difference of ideals in our colleges must always prevent our Indian Universities from becoming Universities in the European sense. Aligarh and the Central Hindu College have some chance of reaching this goal, while our older Universities must fight their way to a different ideal. But, for all that, our teachers have common grounds in non-contentious subjects, and a common objection to superficial and perverse curricula. They must no doubt define their own frontiers, but they have managed pretty well with this difficult task; and they possess a clearer view than the public how to arrange for mutual freedom. To all of them, then, the provision for more representation on the Syndicate should be welcome; but they should all bear in mind that they can only claim this privilege if they are prepared to use it in a tolerant spirit. As far as Bombay goes we believe this tolerant spirit exists and may be expected. Mr. Mehta indeed does not agree with this. He looks for little but jealousy and injustice from professors; or, rather, to be accurate, from *some* professors: "For God's sake," he cries, "do not let the Senate be largely composed of professors from some colleges!" By "some," no doubt, he means Government or European; but we believe that, if inquiry were made, from Kathiawar to Kolhapur, it would not be found that these professors had inspired the staffs of other colleges with the suspicion which Mr. Mehta nourishes—certainly they have not spoken for themselves to that effect.

One point remains in which as teachers we are interested. Mr. Gokhale repeated his complaints regarding the character of Government professors. He desires abler and more sympathetic men; he thinks these could be procured by offering them the pay of civil servants, and, if this were done, the tone of Government colleges would be completely altered in a few years. We will not again defend the character of Government professors: if the reader remembers the facts as produced in these pages once before, he will see that (without offence to the Civil Service) it may be claimed that the academic status of professors is much higher than that of the former. But we will again insist on the fact that men of the character Mr. Gokhale wants will not consent for the sake of a few rupees to waste their lives in India. To a man who hopes to achieve either fame or original work exile in India is clearly fatal. The one man who may carry these hopes to India is the Orientalist; yet even here we may note that Dr. Kielhorn left India at the earliest possible moment after fifteen years of service. If we consider the case of Prof. Raleigh, who had exceptionally pleasant conditions to keep him at Aligarh, can any one doubt that he did wisely to return to the English world of letters? Or, if scientific work be mooted, what sort of answers have the promoters of the Tata Institute received from European professors whom they have approached? No. The specialist in India loses his environment, his inspiration, and his public; and with them all his hopes of distinction. He would be foolish indeed to sacrifice these for a little money. . . .

We do not deny that Government colleges in India need much to make them "model colleges." They need *larger* staffs, and the distinction of Pass and Honour Courses, and divers other things—but we must confine ourselves to topics directly suggested by discussion of the Bill. We will close by repeating a doubt whether the Bill will affect the Bombay Presidency as much as is generally supposed. We do not think with Mr. Mehta that it will "clip the wings of higher education"; nor do we think, on the other hand, that it will make higher education much more efficient than it would have been without it. Progress, which has not been absent in the past, will go on in the future. It is a Bill plainly intended to correct certain abuses of the educational system, which, we may say without conceit, have not appeared in Bombay—or, at least, they showed their heads and have been suppressed.

2. A Mohammedan University.

The idea of a Mohammedan University, originating naturally at Aligarh, has come into general discussion throughout Mohammedan India. His Highness the Aga Khan, "the enlightened religious head of one of the largest and most influential communities of Western India," speaking as President of the Reception Committee at the seventeenth session of the Mohammedan Anglo-Oriental Educational Conference at Bombay at Christmas, said:

The far-sighted among the Mussulmans of India desire a University where the standard of learning shall be the highest, and where, with scientific training, there shall be that moral education, that indirect, but constant, reminder of the eternal difference between right and wrong, which is the soul of education. It is a source of regret for many of us that in the Indian Universities there is that divorce between learning and religion which, especially in the case of Moslems, will, I fear, lead to disaster. We Moslems would most gladly welcome a Hindu University at Benares; we would gladly welcome another at Poona, a third in Bengal or Madras. But, because there is evidently no desire on their part to have a sectarian University with a Brahminical atmosphere, it is absurd to deny us a University at Aligarh with affiliated colleges all over India. Another reason why we require a central University where our individuality may not be lost for the sake of turning out a mechanical imitation of a European is this: we have a history in which noble and chivalrous characters abound; we have a glorious past so full of heroic figures that direct contact and communion with them could not but improve and give our youth early in life that sense of the necessity for self-sacrifice, for truthfulness, and for independence of character without which instruction and knowledge are, from the national point of view, worthless. . . . It is for this that I beg of you that the cause of a central University—a University which, please Heaven! may rank with Oxford and Leipsic and Paris as a home of great ideas and noble ideals—should not be forgotten in the midst of the shouts of the market place.

Mr. Justice Tyabji, the President of the Conference, however, is not any farther advanced on the question than he was when it was first mooted. While as proud of the Mohammedan theology and the Arabic and Persian literature as the Aga Khan, he strenuously insisted that "we should do our utmost to master those branches of literature and science which are at this moment the distinguishing feature of the nations of Europe and America." "We must not shut our eyes to our changed circumstances." But as to a Mohammedan University—in Bombay at least:

My humble view is that a Mohammedan University, if properly conducted and adequately supported, would be a great advantage to our community. I am persuaded that a good University conducted on a sound basis is necessary to maintain the *esprit de corps* among us, to inculcate moral principles, to cultivate discipline, and, above all, to

impart sound religious instruction, without which we must soon disintegrate into separate atoms, and can never hope to be a united and single community. But the difficulties in our way are very great. To impart religious instruction which shall be broad, enlightened, general, and not narrow or sectarian, is no easy task. We are unfortunately split up into so many different sects and communities that I almost despair of any religious instruction which will not in some measure tend to bring about the very dissensions and disagreements which it is the desire of us all to remove and eradicate. Moreover, the establishment of a University presupposes the existence of a number of efficient colleges and educational institutions for Mohammedans throughout India. We can do without a University, but we cannot do without these local educational institutions. The foundation must first be laid; it must be firm and solid. It would be idle and vain to erect a superstructure of a University upon a weak foundation such as exists at the present day. Look at Bombay, with which I am perhaps more familiar than many of you who hear my words. What facilities have we for education in this great city? We have, in the first place, a few small, not very satisfactory, local *muctabs* "scattered" over Bombay. We have, then, the Anjuman-i-Islam schools; no doubt carrying instruction up to the matriculation standard, but these institutions are not sufficiently supported. The higher classes are half vacant. As to the colleges, we have no Mohammedan colleges at all, and very few students of our faith have joined such colleges as already exist. All this is, to my mind, most unsatisfactory. Considering the Mohammedan population of Bombay Presidency, the students in the high schools and colleges are a mere handful. I would first remedy these evils; I would first fill our primary, secondary, and high schools and colleges with Mussulman boys in this Presidency before I could be persuaded that a Mohammedan University for Mussulman boys from this Presidency is necessary. Supposing we had a Mohammedan University, how many students from the Bombay Presidency would join it? I am afraid, very, very few, indeed, if any. Therefore, so far as this Presidency is concerned, there is no immediate need for a Mohammedan University. I do not pretend to speak with any authority as regards the needs of other provinces.

OPEN COURT.

Thay say . . .
Quhat say thay?—Lat thame say!

SUGGESTIONS FOR EDUCATIONAL REFORM.

To Link the School with Practical Life.

By R. W. Cole.

There is a growing feeling that the educational arrangements of this country are far behind the needs of the times. Formerly education was valued only for its own intrinsic merits and as a means of affording culture, and purely utilitarian results were not regarded. But the tendency of modern requirements is more than ever to look for some useful results from the national system of education. There is a growing belief that, besides affording mere knowledge, education must fit a boy for the station in life which he will one day occupy. The clerk must be educated to take his place in the office, the artisan in the workshop, and the future proprietor of an industrial or commercial concern must be so trained that he is capable of taking his place at the head of a complicated and highly scientific business. The need for smart and progressive men at the head of, and as subordinates in, industrial undertakings is always increasing. Partners and managers can no longer afford to sleep in their easy chairs and let their businesses rub along anyhow. They must always be alert and watchful; for what are up-to-date and efficient methods to-day will become obsolete and useless to-morrow. The modern stimulus of competition makes it necessary that all concerned shall be smart and capable men, or they will be ousted by clever rivals or the enterprising and pushing foreigner. In the near future the principle of the survival of the fittest will obtain to as great an extent in trade as it does in the natural world. Manufacturing processes become more complicated and scientific year by year, whilst competition increases the necessity for cheapness of production. Manufactured articles can be made cheaply only by quick appreciation and employment of the latest improvements by the proprietor who is gifted with keen foresight and sound judgment. He must also be backed up by an intelligent and progressive staff of workers. Such men are necessary to uphold our commercial supremacy in the teeth of American and Continental competition, and they can be obtained only by thoroughly revising our educational programme. America is very rapidly becoming our most dangerous rival in the commercial and industrial world; and it is only by being fully equipped with a sound and comprehensive education that we can expect our men to hold their own against Transatlantic rivalry. Expecting them to meet with success without up-to-date education is like requiring them to make bricks without straw.

Utility must be the sole criterion of all modern educational systems if they are to be up-to-date and thoroughly satisfactory. Our system of excessive classics and meagre English, science, and modern languages has become so stereotyped that it is exceedingly difficult to obtain any alterations. Many head masters view the relegation of the study of classics to a subordinate place with disfavour. Their own education has filled them with prejudices in favour of studies which the course of time or a fresh combination of circumstances has rendered obsolete. They studied only classics for many years when they were at school and again for three or four years at the Universities, and they have probably taught that subject ever since. It is, accordingly, the only subject which they understand and for which they have any sympathy. Under such head masters all other and more necessary subjects must go to the wall. The same is the case with a head master who is solely a mathematician or a specialist in any other branch of knowledge.

It is imperatively necessary that classics, notwithstanding its culture results and connexions with the past, should be relegated to a very subordinate position in school curricula, while other more important subjects are brought to the front. At most schools all boys, as soon as they can read and write, begin to study Greek and Latin. The advantages that are urged in favour of a classical education are that it trains the mind and teaches boys to speak and write English correctly. The disadvantages are that Greek and Latin are difficult languages to learn, their literature is uninteresting to boys and difficult to understand, and they deal with modes of thought and ideas which are two thousand years old. Boys cannot comprehend the spirit of dead languages, in which it is impossible for them to converse, as is the case with modern languages. Moreover, both of these languages are so idiomatic that even the easiest authors which are placed in the hands of the beginners cannot be translated literally without making absolute nonsense. The process of continually repeating a section of a book until it is learnt by heart and can be faultlessly translated into English only develops the parrot-like instincts of the schoolboy, without stimulating his thinking powers or enabling him to grasp the spirit of the language. This absurdity is encouraged by the habit so largely obtaining of prescribing set books for certain examinations. The futility of this system is demonstrated by the well known unsatisfactory performance of most schoolboys when they have to translate unseen passages. The translation of such passages is a much surer test of the soundness of a boy's knowledge of a language and his grasp of its genius than his ability to do set passages or grammar papers, for which he can be specially crammed. The injurious process of cramming will enable a boy to pass most examinations successfully; but he cannot be crammed to translate unseen passages. At most schools boys are trained in classics from the ages of ten to eighteen. A very small percentage become scholars, a few acquire a tolerable knowledge of Greek and Latin, whilst the great majority remember only sundry grammatical rules and stock quotations, and cannot make a decent translation of the easiest unseen passage.

Such is the unsatisfactory result of throwing every boy, without discrimination, into the classical mill and fastening him to a study for which he probably has no aptitude. I would have every boy well grounded in arithmetic, modern languages, history, English, and elementary science until he reaches the age of fifteen or sixteen. By that time, if he has any intellectual power at all, he will have shown an aptitude for either languages, mathematics, or science. Such being the case, he might be allowed to specialize in one of these subjects, but he should be compelled to study English, history, literature, arithmetic, and science for a certain number of hours a week, for no system of education can be called complete which does not include these subjects. In this manner an education would be acquired involving both culture and useful results. A system of education which means specialization in one particular subject to the exclusion of all others is not worthy of the name, for it narrows the mind and warps the intellect. All boys should, without exception, be thoroughly proficient in arithmetic, the principles of chemistry and physics, English history and literature, and at least one modern language. It is not of much use for any boys to attempt to study, or to be made to study, Euclid and algebra unless they show a decided aptitude for these subjects and are likely to proceed to the higher branches. A limited

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knowledge of Euclid and algebra is of no use from a practical or educational point of view, and the time wasted over them is quite incommensurate with the advantages gained. Elementary mathematics should only be studied with utilitarian aims, as it is of little value as a mental training. The mental powers are not developed by wasting hours over abstruse subjects which are imperfectly understood. The time so employed would be much better devoted to easier, and to the unmathematical mind more interesting, subjects.

There is another lamentable defect in the present system of education. Our Empire is the largest and most scattered in the world, our commerce the greatest, and our manufactures the best; but ninety-nine boys out of a hundred on leaving school have only the vaguest notions as to the extent or whereabouts of our possessions or the conditions upon which our national existence depends. They know nothing about the natural features, products, constitution, and government of the separate colonies. They are also as ignorant of the commerce, manufactures, or even the government of the British Isles. To remedy this disgraceful ignorance, two or three hours a week should be devoted to the study of the British Empire at all schools. It is almost hopeless under the present system of organization and whilst almost all schools lie under the thraldom of boards of examiners to obtain any alterations in this respect. Those who arrange the syllabuses of our public examinations might encourage a knowledge of the British Empire by setting a paper on this subject.

Organization and origination are two subjects which might be taught to elder boys during their last year at school. Many boys of the upper classes will one day control factories and business concerns either as managers or as proprietors; yet how many are taught to organize or originate? The same is the case with military students; and their incapacity in this respect becomes painfully apparent later on in life when they are promoted to posts at the War Office. Lessons in organization and origination could be made very interesting, and would attract the attention of dull boys on account of their practical nature. Those who intend later on in life to start businesses on their own account would thus be fully equipped with the knowledge how to obtain and employ capital, of the laws of partnership, and of the manner of organizing and running an office or factory. It is true that such knowledge can be subsequently picked up by passing some time as a pupil with a manufacturer or merchant; but these practical men are not good teachers, their pupils are not under discipline, and knowledge is picked up in a haphazard way. With good teaching, an equal amount of knowledge could be acquired in one-tenth of the time.

Another serious defect in the modern educational system is the treatment of the stupid boy. There are many naturally dull and stupid boys at every school—that is to say, boys who are dull and stupid at book-learning. It is not fair to say that all such boys are lazy or do not want to learn; some simply cannot learn. The subjects on the curriculum are not suitable to their peculiar mental powers; and their lack of success demonstrates the folly of trying to subject all boys, without distinction, to the same mental training, and plane them all down to the same mental level. There are almost as many classes of boys, with their different failings and aptitudes, as there are fishes in the sea. The result is that many thousands of boys leave school with only a smattering of knowledge, which is useless for any practical purpose. How crass is the ignorance of such boys only those who teach them know; but, in spite of their ignorance, some of them afterwards become successful men of business, for they can flourish as soon as they get away from books, and can turn their attention to the practical aspects of life. This shows that, if the attention of apparently stupid boys could be diverted to subjects which suit them, they would be successes.

I have noticed that many boys who are of no use at book-learning are good at subjects in which they can use their hands. Thus, many apparently stupid boys are very good at geometrical drawing. Indeed, one might almost formulate a rule that boys who are very good at this subject do not get on with book-learning. Other stupid boys flourish at figure and landscape drawing; while many more are good at all kinds of manual work, such as carpentering, metal-work, model-engineering, surveying, and practical science. Here we have an abundance of useful and profitable subjects in which the so-called stupid boys flourish, and which they might be encouraged to pursue under an enlightened system of education. But, instead of being allowed to do so, they waste many years and much money in grinding at dead languages which they cannot appreciate and trying to learn propositions of Euclid and solve algebraic equations. It is head masters who are mainly responsible for the many absurdities of our educational system. A modern head master is not expected to write an elaborate treatise on Greek particles or to publish a recondite work on rigid dynamics. It is his business to find out the peculiar aptitudes of every boy under his care, and to so direct his energies that on leaving school he is well qualified for following a business or profession with success. Given a rational system of education and able teaching, full justice would be done to every boy; and, the number of failures being diminished, the efficiency of the nation would be greatly improved.

THE INTERNATIONAL ASSOCIATION OF ACADEMIES.

The session of the General Assembly of the International Association of Academies, which opened on May 25, has attracted immense interest in our higher educational circles. We record elsewhere the honours to be conferred by Oxford and Cambridge on the more eminent of the visitors. The Association was established on its present basis in 1899, on the initiative of the Royal Society of London. It now comprises twenty Academies and learned societies of Europe and America. The Association, at its meeting in 1901, delegated to a commission appointed from the Académies des Sciences et des Sciences Morales et Politiques of Paris and the Königliche Preussische Akademie der Wissenschaften in Berlin the task of preparing an edition of the works of Leibnitz. Other projects submitted to the Association are a general investigation, on common lines, of the anatomy of the brain; a scheme for carrying out a complete magnetic survey around a parallel of latitude; a proposal for carrying out at a large number of stations systematic observations upon atmospheric electricity; an extension of the geodetic arc along the 30th meridian; a proposal for facilitating the international loan of original manuscripts; plans for a critical edition of the Mahabhârata, for an encyclopædia of Islam, and for the publication of records of Ancient Greece; a proposition for a new Thesaurus of Ancient Greek, and another for a new Pali Dictionary.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

THE DANGER THREATENING SECONDARY EDUCATION.

To the Editor of "The Educational Times."

SIR,—Although much has been done of late to provide for the organization of educational effort, it will not have escaped the notice of observers that the new system has induced dangers of its own, against which those especially concerned in secondary education would do well to guard.

Those dangers may be roughly divided into two classes, viz., those connected with the election to Local Education Committees of party men and loud-voiced demagogues who know little about secondary education and care less; and also those relating to the almost exclusive attention given by the Board of Education and by Local Authorities to public elementary education, and to the provision and assistance of candidates preparing to enter that branch of the profession.

The composition of the Education Committee of the London County Council illustrates the disadvantage under which secondary schools and secondary teachers must necessarily lie when matters attaching to higher education come before that body. How many amongst its members are eligible by knowledge and experience to represent the various phases of action and effort in the vast London area?

A powerful union is unceasingly active in keeping the educational and political side of elementary education before the public. Is there any sign that the various associations of secondary teachers and the large and important section of the public interested in the maintenance of our public and private schools are alive to the fact that union is strength, and that greater watchfulness and activity are necessary on their part to safeguard the position to which these schools have attained? Yet the question must soon be answered: Shall the forces which are designed to mould our educational system act from above or from below?—I am, Sir, &c.,

J. O. BEVAN.

Chillenden Rectory, Dover, *May* 9, 1904.

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CURRENT EVENTS.

Fixtures.

AT the monthly meeting of members of the College of Preceptors to be held on June 15, Mr. H. C. Bowen, M.A., will read a paper on "The Part played by Books in the Education of the Individual."

* * *

THE Annual Conference of the Association of Head Mistresses will be held at the Datchelor School for Girls, Camberwell, on June 11.

* * *

PROF. J. J. THOMSON (Cambridge) will deliver the Robert Boyle Lecture in the hall of Balliol College, Oxford, on the evening of June 3: subject, "The Structure of the Atom."

* * *

THE Romanes Lecture will be delivered by Sir Courtenay Peregrine Ilbert, K.C.S.I., in the Sheldonian Theatre, Oxford, on June 4, at 3 p.m.: subject, "Montesquieu."

* * *

IN the Oxford Long Vacation Course Mr. Mackinder will deliver the introductory lecture on August 2, at 8 p.m. He will also give three lectures on "The Relations of Geography and History." Mr. Beazley will deal with "The Advance of Geography: Land Travel, Oceanic Exploration, Scientific Geography" (three lectures); Dr. Dickson with "Some Problems in Physical Geography" (six lectures); and Mr. Herbertson with "The Geography of S.E. England, with special reference to the Oxford District" (six lectures and map demonstrations and three excursions). Dr. Dickson will also conduct a field class for surveying with plane table and prismatic compass (two whole days).

* * *

UNDER the Martin White benefaction, the University of London has arranged that during the session 1904–5 there will be delivered by Dr. Westermarck, of Helsingfors, a course of forty lectures on "Social Institutions and Relationships," and twenty *Seminar* classes in connexion therewith, as well as a shorter course on a kindred subject. Dr. A. C. Haddon, F.R.S., also will give a course of thirty lectures and thirty *Seminar* classes on "Ethnology." It is hoped that Mr. Lafcadio Hearn will be able to accept an invitation to deliver ten lectures on "Japanese Civilization."

Honours.

MR. JOHN MORLEY, M.P., has been nominated by the Chancellor of Manchester University a member of the University Court.

* * *

MANCHESTER UNIVERSITY has resolved to confer the honorary degree of LL.D. on Alderman Joseph Thomson, Treasurer of Owens College.

* * *

LORD KELVIN, the new Chancellor of the University of Glasgow, has appointed Mr. Henry Gordon, of Aitkenhead, his representative in the University Court.

* * *

IN connexion with the visit of representatives of the Con-

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ference of Academies, Oxford University proposes to confer honorary degrees as follows :—

D.C.L.: Chevalier Édouard Descamps, University of Louvain, Ministère d'Etat, Senateur Belge.

D.Litt.: J. L. Heiberg, University of Copenhagen; M. Émile Senart, Académie des Inscriptions et Belles Lettres, Paris; M. Boutroux, Académie des Sciences Morales et Politiques, Paris; and Prof. Collignon, Académie des Inscriptions et Belles Lettres, Paris.

D.Sc.: Prof. De Flechsig, Leipzig, Kgl. Sächsische Gesell. der Wissenschaften; Prof. E. Ehlers, Kgl. Gesell. der Wissenschaften, Göttingen; M. A. Giard, Académie des Sciences, Paris; Dr. Victor von Lang, Kaiserl. Akad. der Wissenschaften, Vienna; Prof. H. Mon, Christiania; and Prof. H. Obersteiner, University of Vienna.

The University of Cambridge proposes to confer the following honorary degrees :—

Sc.D.: Henricus Gerardus van De Sande Bakhuyzen, President of the Royal Academy of Sciences, Amsterdam, Professor of Astronomy in the University of Leiden; Andrej Sergejevitch Famintsyn, Member of the Imperial Academy of Sciences of St. Petersburg; Pierre Paul Leroy-Beaulieu, Professor of Political Economy in the College of France, Paris; Edmund Mojsisovics, Edlar von Mojsvar, Member of the Imperial Academy of Sciences, Vienna; Gustav Retzius, Member of the Royal Swedish Academy of Sciences, Emeritus Professor of Anatomy in the University of Stockholm; Edward Rieche, Member of the Royal Academy of Sciences and Professor of Physics in the University of Göttingen; Wilhelm Waldeyer, Secretary of the Royal Prussian Academy of Sciences and Professor of Anatomy in the University of Berlin.

Litt.D.: Amable Charles de Franquet, Comte De Franqueville, Member of the Academy of Moral and Political Sciences of the Institute of France; Ignacz Goldziher, Member of the Hungarian Academy of Sciences, Professor of Semitic Philology in the University of Budapest; Theodor Gomperz, Member of the Imperial Academy of Sciences, Vienna, Emeritus Professor of Classical Philology in the University of Vienna; Karl Krumbacher, Member of the Royal Bavarian Academy of Sciences, Professor of Mediæval and Modern Greek Philology in the University of Munich; Georges Perrot, Member of the Academy of Inscriptions and Literature of the Institute of France, Director of the École Normale Supérieure, Paris.

* * *

In Convocation, June 7, it will be proposed to confer the degree of Master of Arts by decree of the House upon Charles Francis Bell, Trinity College, Assistant Keeper of the Ashmolean Museum; Henri F. Berthon, Taylorian Teacher of French; Carlo Felice Coscia, Taylorian Teacher of Italian; and Don Fernando de Arteaga y Pereira, Taylorian Teacher of Spanish.

* * *

The Senate of the Royal University of Ireland has resolved to confer the honorary degree of Doctor of Science on Sir William Crookes, F.R.S., and on Prof. James Dewar, F.R.S.

* * *

The Council of the University of Birmingham has conferred the honorary title of Professor of Geography on Mr. W. W. Watts, M.A., F.R.S., Assistant Professor of Geology.

Endowments and Benefactions.

Mr. Francis G. Smart, M.A., M.B., of Gonville and Caius College, has founded, in the University of Cambridge, a studentship of £100 a year, tenable two years, for the encouragement of botanical research.

* * *

The Hon. T. A. Brassey (Balliol) has offered to the University of Oxford £400, to be given in one or more studentships for research in some subject of Mediæval or Modern history. He has also given £100 to the Bodleian Library, to be expended in the purchase of books dealing with the history of the English Colonies and Dependencies.

* * *

Mr. J. Martin White has made another generous contribution towards the expenses of the courses on Sociology organized by the University of London under the benefaction that bears his name.

* * *

The Mercers' Company have given a donation of £1,000 to the Institute of Medical Sciences Fund (University of London), and the Clothworkers' Company have given £300.

The trustees of the will of the late Miss Rebecca Flower Squire have handed over to the University of Oxford £3,000 in augmentation of the Squire Scholarships in Theology.

* * *

Sir John Williams, of Plas Llanstephan, and Mr. J. H. Davies, of Cwrtmawr, have provided for the transfer of their very valuable libraries in due course to a Welsh National Library, if such be established at Aberystwyth, or, failing such library, to the library of Aberystwyth University College. Sir John Williams has also purchased the still more famous Peniarth Library—"the premier collection of Welsh manuscripts both in extent and quality." The three collections contain well over a thousand MSS.

* * *

The Glamorgan County Council has established at Cardiff University College 3 studentships, £30 each, with free tuition for 3 years, to students studying for the B.Sc. of the University of Wales in mining subjects; 5 studentships, £30 each, with free tuition for 2 years, for students prepared to profit by the diploma course in Mining; 1 exhibition, £30, with free tuition for 3 years, to a student taking the diploma course in Engineering. The Council has also made certain provisions for the assistance of girls of the county studying for Honours or taking a Secondary Training Course.

Scholarships and Prizes.

A combined examination for scholarships, exhibitions, &c., will be held at Trinity, Clare, Trinity Hall, Peterhouse, and Sidney Sussex (Cambridge), on December 6 and following days. Forms of application from any of the Tutors of Trinity, the Senior Tutor of Clare, the Master of Trinity Hall, the Senior Tutor of Peterhouse, or the Master of Sidney Sussex. Entries should be made not later than November 18.

* * *

The British Fire Prevention Committee offer a gold medal and purse of £20 for "the best fable for children calculated to serve as a warning against the danger of playing with matches or fire." They will also reward meritorious essays with two silver and four bronze medals. Conditions from the Secretary, 1 Waterloo Place, S.W. (enclose stamped addressed envelope).

* * *

The University College of South Wales (Cardiff) offers a scholarship in Arts (£40, for three years) in September next.

Appointments and Vacancies.

The President of the Board of Education (the Marquis of Londonderry, K.G.) has appointed a Departmental Committee to inquire into the present working of the Royal College of Science, including the School of Mines; to consider in what manner the staff, together with the buildings and appliances now in occupation or in course of construction, may be utilized to the fullest extent for the promotion of higher scientific studies in connexion with the work of existing or projected institutions for instruction of the same character in the Metropolis or elsewhere; and to report on any changes which may be desirable in order to carry out such recommendations as they may make. Sir Francis Mowatt, G.C.B., is Chairman of the Committee, and Mr. J. C. G. Sykes, Assistant Secretary in the branch of the Board which deals with evening schools, technology, and higher education in science and art, has been appointed Secretary to the Committee.

* * *

The President of the Board of Education has appointed Sir Francis Fleming, K.C.M.G., and Mr. Sidney Wells, Principal of the Battersea Polytechnic, to be members of

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the Teachers' Registration Council, in the place of the Rev. W. A. Fearon, D.D., and Mr. James Fitzalan Hope, M.P., resigned.

* * *

THE Council of the Incorporated Association of Head Masters has nominated the President, the Rev. Canon G. C. Bell, M.A., as the representative of the Association on the Teachers' Registration Council, in place of Dr. R. P. Scott.

* * *

THE REV. F. W. BUSSELL, D.D., Vice-Principal of Brasenose College, Oxford, has been elected Bampton Lecturer for 1905.

* * *

PROF. F. S. BOAS, of Queen's College, Belfast, has been appointed Clark Lecturer in English Literature at Trinity College, Cambridge, for the academical year 1904–5.

* * *

THREE Chairs are now vacant in Trinity College, Dublin: Arabic, by the resignation of Dr. S. Lane-Poole; Latin, by the translation of Dr. Purser to the office of Junior Bursar; and Ancient History, by the promotion of Dr. Tyrrell to the ranks of the Senior Fellows.

* * *

MR. ANDREW LANG, Honorary Fellow of Merton, has been appointed Ford's Lecturer in English History at Oxford for the ensuing academical year.

* * *

MR. C. H. LOCH, B.A., Secretary to the Charity Organization Society, has been appointed Tooke Professor of Economics in King's College, London.

* * *

MR. F. G. DONNAN, Ph.D., M.A., Lecturer in Chemistry in the Royal College of Science, Dublin, has been appointed to the Brunner Chair of Physical Chemistry in the University of Liverpool.

* * *

MR. T. W. ARNOLD has been appointed Professor of Arabic in University College, London.

* * *

AT Birmingham University Mr. George A. Lister has been appointed Lecturer and Demonstrator in Electrical Engineering; Mr. E. Langford Hazel, draughtsman in the Engineering Department; and Dr. W. A. Potts, Assistant Lecturer in Pharmacology.

* * *

MR. GEORGE K. MENZIES, M.A. (St. Andrews), has been appointed Secretary to the Academic Registrar of the University of London, in succession to Mr. Horace E. Mann, resigned.

* * *

MR. HAROLD WHYTE has been appointed Assistant in Ancient History to the Astor Professor of History in University College, London.

* * *

MR. THOMAS LEE HUTCHINS, M.A., B.Sc., science master at Ilminster Grammar School, has been appointed Head Master of Kirton Grammar School, Lincolnshire, in succession to Mr. W. St. G. Drennan, M.Sc. (Vict.).

Mr. Henry W. Mayo, B.Sc., A.C.P., succeeds Mr. Hutchins as science master at Ilminster.

Literary Items.

THE Delegates of the Clarendon Press have taken over the series of "The Regions of the World," which is under the general editorship of Mr. H. J. Mackinder, and in future this series will be published by Mr. Henry Frowde. Two new volumes will be issued this year—"North America," by Prof. Israel Russell, of the University of Michigan, at the end of this month; and "India," by Sir Thomas Holdich, K.C.I.E., in the early autumn. It is hoped that "The Far East," by Mr. Archibald Little, will soon be in the press. We have already noticed the three volumes that have appeared—"Britain and the British Seas," by Mr. Mackinder, "Central Europe," by Prof. J. Partsch, and "The Nearer East," by Mr. D. G. Hogarth.

* * *

MESSRS. A. & C. BLACK are publishing a new edition of "The Lady of the Lake," with vivid illustrations in colour and in black and white. Also a new work on "The Burns Country," by Charles S. Dougall, M.A., Head Master of Dollar Institution, with a frontispiece reproduction of the Nasmyth portrait of Burns and 50 illustrations from photographs.

* * *

MESSRS. T. C. & E. C. JACK have projected a series of elaborate monographs on the prominent personages that have made English history. These are intended to be at once works of beauty and models of historical research. Dr. Augustus Jessop is writing the first volume of the series, on William Cecil, Lord Burghley. The genealogy of the Cecil kin will be treated by Mr. Fox-Davies; while the Cecil family portraits have been collected and will be commented on by Mr. J. L. Caw, of the Scottish National Portrait Gallery. Mr. J. A. Gotch will write on the Homes of the Cecils. The general editor is Mr. Francis Pierrepont Barnard. The edition of each monograph will be strictly limited.

* * *

THE next volume in the thin paper re-issue of Mr. Fisher Unwin's "Mermaid" series will be a selection from the plays of Sir John Vanbrugh, edited by Mr. A. E. H. Swain.

* * *

"THE *Queen* Newspaper Book of Travel," compiled by the Travel Editor, is announced by Mr. Horace Cox. The volume will include full particulars of service to travellers, and also articles illustrated with specially prepared maps.

* * *

THE *Independent Review* (May) opens with a suggestive article, by Mr. C. F. G. Masterman, entitled "Towards a Civilization." But what has "the expenditure upon maintaining the White Man's Burden in Thibet" to do with the pockets of "the mass of the voters of this country"? It is the Indian, not the English, taxpayer that will have to pay. Mr. A. W. Pickard-Cambridge contributes a piquant notice of several recent books on higher education.

* * *

IN the *Monthly Review* for May, Mr. C. Litton Falkiner enters an interesting protest against Prof. Bury's dictum that "history is not a branch of literature"—that "to clothe the story of a human society in a literary dress is no more the business of a historian as a historian than it is the part of an astronomer to present in an artistic shape the story of the stars." But, after all, would there be anything to quarrel about if the terms of dispute were precisely attended to?

* * *

THE April number of the *Modern Language Quarterly* is especially strong. It contains Dr. Breul's Herder Centenary Address, Sir Arthur Rücker's Presidential Address to the Modern Language Association, and several important papers read before the Association.

General.

THE proposal of a memorial to the late Sir Leslie Stephen is well supported. It is suggested that, in the first instance, an engraving should be made of the portrait by Mr. G. F. Watts, R.A., and that copies should be presented to the London Library, the Athenæum Club, Harvard University, and Trinity Hall, Cambridge.

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A STATUE of Shakespeare, executed by Prof. Lessing, has been erected in the Grand Ducal Park at Weimar by the German Shakespeare Society. On the occasion of the unveiling, the Society held its annual meeting at Weimar, and "Hamlet" was performed, the title *rôle* being taken by Joseph Kainz, the foremost living German actor.

* * *

WE regret to record the death of Mme. Joseph Neuberg at Liège on May 4. Prof. Joseph Neuberg, of the University of Liège, may be assured of wide sympathy among our readers, who are well acquainted with his valuable contributions to our mathematical columns during many years past.

* * *

THE *Physikalische Zeitschrift* for April 15 publishes a list of the courses of lectures for the summer term in the German-speaking Universities and technical schools.

* * *

WE understand that a site at Hampstead has now been definitely secured for University College School.

* * *

THE foundation stone of the Armstrong extension of the Durham College of Science, Newcastle-on-Tyne, was laid (May 2) by Mr. T. G. Gibson.

* * *

THE Board of Education have issued the Regulations and Syllabus for the King's Scholarship Examination, 1905, and for the Certificate Examination, 1906.

* * *

THE *London University Gazette* (May 14) publishes a convenient list of scholarships and exhibitions awarded by the University, by the schools of the University, and by institutions at which there are recognized teachers.

* * *

A MEMORIAL tablet to Mr. J. Lloyd Griffith, formerly member of the Council of North Wales University College, was unveiled (May 13) at St. Cybi Church, Holyhead, by Principal Reichel.

* * *

AT a largely-attended meeting at the Birkbeck Institution (May 14), Dr. R. P. Scott in the Chair, it was decided to form an Association including all teachers in schools and institutions other than primary receiving aid from the London County Council.

* * *

THE Board of Education have just issued a revised list of twenty-five Holiday Courses to be held on the Continent at different times during the present year, mostly in the summer months. Copies to be obtained post free on application to the Board of Education Library, St. Stephen's House, Cannon Row, Whitehall, S.W.

COLLEGE OF PRECEPTORS.

METHODS OF TEACHING MODERN FOREIGN LANGUAGES.

AT the Members' Meeting which took place on May 18, Mr. H. W. EVE in the Chair, an interesting demonstration of methods of teaching German and French was given by Mr. W. CAMPBELL BROWN, one of the Principals of the Tollington Schools, and Mr. R. J. SHANKLAND, modern language master at the same schools. A class of boys was in attendance for each of the lessons, which were given as far as possible under normal conditions.

In his introductory remarks Mr. BROWN explained the leading principles of the New Method, which was, he contended, a natural method, and not intended, as some had maintained, to technicalize language teaching. It might, in fact, be so conducted as to combine the advantages of mental training to be derived from what might be called the Classical Method with the living interest to be derived from oral teaching. On the other hand, the extreme advocates of the New Method, in insisting on regarding the learner as in the position of a child in learning his mother tongue, failed to take account of the increased powers that his general training had developed in him; and this consideration was more particularly to be kept in view when the study of a second foreign language was begun. The problem the teacher had to deal with was how to commence and continue the study, so as to excite and maintain the interest of the pupil, to acquire as speedily as possible a working vocabulary, and to make the most of the mental discipline that was to be derived from the analytic study of the foreign tongue. In this connexion, it was specially important to pay attention to the proper position of translation and of grammar. The advocates of the New Method were, he considered, entirely justified in their opposition to the practice of making construing or the study of grammar the principal factor in language teaching; but he held that they were equally wrong in asserting that no place should be found for translation and that the teaching of grammar should be entirely discarded. The question was rather how best to make use of both translation and grammar so as to aid in fixing the forms of the language. Translation should never be used in such a way as to imply that for every German or French phrase there was but one equivalent English expression; and the grammatical structure of the language should not be made a scientific and logical study until the foreign language was fairly well known and the grammar rules had been already intuitively assimilated by constant oral drill. It should, in particular, be noted that every grammatical point to which attention was drawn should be illustrated in an entire sentence.

Mr. Brown then proceeded to give a lesson to a junior class, the text of the lesson being a description, in German, of Germany in the olden times, illustrated by a large-scale map, on which the boundaries and physical features of the country were boldly indicated. The passage was first read aloud, and repeated by the whole class. Then each sentence was taken in succession and explained where necessary, the explanation being always in German, supplemented by the use of the black-board to illustrate grammatical points. The text was then made the subject of conversation, each member of the class being called on in turn to answer questions put by the teacher on the subject-matter. In the grammar practice particular attention was paid to the forms of the verbs, and the class was directed to alter the form of the sentence by changing the tenses, *e.g.*, using the present instead of the past, &c.

On the conclusion of the lesson, which occupied about half an hour, the Chairman invited discussion, and several members of the audience availed themselves of the opportunity to ask questions on the method of the demonstration, which were answered by Mr. Brown.

After an interval, Mr. SHANKLAND gave a demonstration of his method of giving a reading lesson in French to a more advanced class of boys. The text was taken from Edmond About's lively story of "Le Roi des Montagnes." The demonstrator prefaced the lesson by a few remarks, in which he deprecated the notion that he was adopting any stereotyped method. The teacher, he said, should not make himself a slave to a system. He must follow his own judgment, and vary his method according to the intelligence of his boys—now dwelling more on the pronunciation, now enlarging their vocabulary by conversation, now spending more time on the grammar and composition. It was his custom to prepare the class by simple conversation on a few commonplace topics, such as remarks on the weather, on the time of day, on interesting events discussed in the newspapers, &c. The reading was then taken paragraph by paragraph. Particular attention was directed to the pronunciation, mistakes being corrected by the boys, and the correct form repeated by the whole class in unison. The reading was followed by a general explanation of the piece by the master in the form of a paraphrase. The teacher should be able to perceive intuitively whether his words were understood, and be ready to vary his phrases accordingly. It was surprising to see how keen this exercise made the boys, each of them being eager to understand as much as possible. The way was now cleared for the fuller explanation of the piece sentence by sentence; unknown words were explained by a periphrase—care being taken always to use words already known—or by blackboard illustration. Occasionally the judicious use of gesture, or even a little acting, on the part of the teacher, might serve to make the lesson less monotonous; or, finally, recourse

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might be had to translation, where abstract ideas had to be made clear. It was only at this stage that the grammar was touched upon. It was taught inductively. According to the antiquated method, they had only a collection of dry rules, so utterly distasteful to the boys, who could not be expected to understand their *raison d'être*. All the salient points of grammar should be explained as they cropped up; and when these rules were required to be known as such they were found to present little difficulty, as they had often been referred to, and the boys did not look upon them as lifeless and aimless rules. Finally, now that the words and the grammar presented no difficulties, they were ready to turn the phrases, now varying the tense, now the person; and sometimes a free composition was set to be written by the class, the subject being chosen so as to admit of the use of the words and forms which had been practised in the lesson.

The lesson which was given, following as it did very closely the lines indicated by the demonstrator, was followed by the audience with the greatest attention, and the eagerness and readiness of the boys themselves was the best testimony to the efficiency of the method.

A hearty vote of thanks to the two demonstrators concluded the proceedings.

COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A Meeting of the Council was held at the College, Bloomsbury Square, on May 18. Present: Dr. Wormell, Vice-President, in the Chair; Rev. Canon Bell, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. Bowen, Mr. Charles, Miss Crookshank, Mr. Eve, Mr. Hawe. Rev. Dr. Hiron, Mr. Kelland, Sir Philip Magnus, Mr. Millar-Inglis, Mr. Pinches, Miss Punnett, Mr. Rule, Dr. R. P. Scott, Rev. Dr. Scott, Mr. Starbuck, Mr. Storr, Rev. J. E. Symns, Mr. Vincent, and Mr. Walmsley.

The minutes of the last meeting were read and confirmed.

The Secretary read a communication from the Rev. Canon Bell, asking the Council to take into consideration a movement that had been recently set on foot for constituting a federation of Associations of Secondary Teachers.—A Special Committee consisting of sixteen members of the Council was appointed to consider the proposals of the Federation Committee and to report to the Council thereon.

Professor Adams was appointed to deliver in the autumn a Course of Twelve Lectures to Teachers on the Practice of Education.

The Report of the Literary Committee was adopted.

The Report of the Finance Committee was adopted, and it was resolved to make arrangements for the lighting of the College building throughout by incandescent gas.

The following persons were elected members of the College:—

Mr. W. J. J. Gossling, A.C.P., The Links, Newport, Essex.
Mr. H. M. Hallsworth, B.Sc. Vict., L.C.P., 88 Rugby Road, Brighton.
Mr. L. W. Lyde, M.A. Oxon., Old Marlowes House, Hemel Hempstead.
Mr. A. Milne, B.A. Lond., University School, Hastings.
Mr. F. Phillipson, B.A. Lond., L.C.P., Commercial College, York.
Mr. P. W. Shelford, B.A. Lond., A.C.P., Duke's School, Alnwick.

The following books had been presented to the Library since the last meeting of the Council:—

By Mr. Baumann.—Baumann's Pictorial German Course.
By Bickers & Son.—Allen's Roman Problems from and after Plutarch's Roman Questions.
By A. & C. Black.—Kirkman's Premières Lectures; Lyde's Elementary Geography of the World.
By W. B. Clive.—Woodhouse's Tutorial History of Greece.
By Macmillan & Co.—Foster and Dobbs's Practical Geometry for Beginners.
Calendar of University College of Wales, Aberystwyth.

The League of the Empire has formulated a scheme dealing with historical study and research. An historical committee has been formed, with Prof. Bury as chairman, other members being the President of Trinity College, Prof. E. A. Gardner, Prof. Lodge, Prof. Flinders Petrie, Mr. R. D. Beloe, hon. secretary. The scheme seeks to encourage the study of history by the foundation of imperial scholarships, to be awarded to each colony in succession, and to be held at all recognized Universities of the Empire. For endowing the history scholarships an appeal is made to the public; cheques to be made payable to Sir Charles Lyall, 11 Dartmouth Street, Westminster, and crossed London and Westminster Bank.

REVIEWS.

The Reformation.

The Cambridge Modern History. Vol. II.: *The Reformation.* (16s. net. Cambridge University Press.)

The administrative and the literary capacity working out this great undertaking may be regarded as at a higher point of efficiency in the present volume than even in its two predecessors. The movements to be co-ordinated, the materials to be sifted and compressed to the due proportion, the judgments to be formed on men and on principles, are all testing in the highest degree; and the results constitute by far the fullest, the most trustworthy, the most instructive, and the most able, in point of literary presentation, of all the many histories of the Reformation, and especially of the single-volume works. Some notion of the mere initial difficulty of securing the contributors may be gathered from the fact that only nine of the nineteen chapters of this volume are the work of the authors to whom they were originally assigned. However, this and subsequent difficulties have been surmounted with conspicuous success.

Prof. Kraus, who has furnished a very fine opening chapter on "Medicean Rome," unfortunately died without giving it his final revision, and without appending the bibliography. He pictures in vigorous outlines the expansion and elevation of intellectual activity under Julius II.—"the zenith of Renaissance culture"—and, standing clear of narrow theological views (whose importance in their own place is amply recognized), he gets at the root of the question what the Papacy really was and really meant for those times. Revising undiscriminating eulogies of Leo X., he concludes that "Leo's one real merit was his patronage of Raffaelle." The artistic and literary life is effectively delineated. Mr. Stanley Leathes compresses into two weighty chapters the struggle of "Habsburg and Valois" through a long half century, foreshadowing the questions of religious reform in Germany (treated in full at a later point), dealing with the various developments of the Italian plot towards the permanent settlement of territorial questions in Europe, and adding necessary explanation of the internal affairs of France, Spain, and the Netherlands. The important chapter on "Luther" is from the pen of Principal Lindsay, of the United Free Church College, Glasgow. Admitting that "it may be an exaggeration to say that the religious side of the Reformation began in the inward religious growth of a single personality," Dr. Lindsay yet thinks that "the impulses in Luther's religious life may be taken as the type of forces which were at work over a wide area." "The real roots of the religious life of Luther must be sought for in the family and in the popular religious life of the times"; and this part of the inquiry is very interesting. Dr. Lindsay indeed traces with vigilant care the gradual development of Luther's thought and action down to his relegation to the Castle of Wartburg—the time when the Lutheran revolt merges in national opposition to Rome. This chapter is exceedingly lucid and able.

Prof. A. F. Pollard next takes up the story, dealing in four consecutive chapters with "The National Opposition to Rome in Germany," "Social Revolution and Catholic Reaction in Germany," "The Conflict of Creeds and Parties in Germany," and "Religious War in Germany." He writes (page 147):

The origin of the whole movement was a natural attempt on the part of man, with the progress of enlightenment, to emancipate himself from the clerical tutelage under which he had laboured for centuries, and to remedy the abuses which were an inevitable outcome of the exclusive privileges and authority of the Church. . . . It was in the beginning quite independent of dogma, and it has pervaded Catholic as well as Protestant countries. . . . This was, roughly speaking, the main issue of the Reformation; it was practically universal, while the dogmatic questions were subsidiary, and took different forms in different localities. It was on this principle that the German nation was almost unanimous in its opposition to Rome, and its feelings were accurately reflected in the Diet of Worms.

Prof. Pollard also contributes a subsequent chapter on "The Reformation under Edward VI.," and there he indicates thus the spirit and character of the movement in England (page 478):

The Reformation in England was divergent in origin, method, and aim from all the phases of the movement abroad; it left the English Church without a counterpart in Europe—so insular in character that no subsequent attempt at union with any foreign Church has ever come within measurable distance of success. It was in its main aspect practical and not doctrinal; it concerned itself less with dogma than with conduct, and its favourite author was Erasmus, not because he preached any distinctive theology, but because he lashed the evil practices of the Church. Englishmen are little subject to the bondage

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of logic or abstract ideas, and they began their Reformation not with the enunciation of any new truth, but with an attack upon the clerical exaction of excessive probate dues. No dogma played in England the part that Predestination or Justification by Faith played in Europe. There arose a master of prophetic invective in Latimer and a master of liturgies in Cranmer, but no one meet to be compared with the great religious thinkers of the world. Hence the influence of English Reformers on foreign Churches was even less than that of foreign divines in England. Anglicans never sought to proselytize other Christian Churches, nor England to wage other than defensive wars of religion; in Ireland and Scotland, which appear to afford exceptions, the religious motive was always subordinate to a political end.

The Reformation in England was mainly a domestic affair, a national protest against national grievances rather than part of a cosmopolitan movement towards doctrinal change. It originated in political exigencies, local and not universal in import; and was the work of kings and statesmen whose minds were absorbed in national problems rather than of divines whose faces were set towards the purification of the universal Church. It was an ecclesiastical counterpart of the growth of nationalities at the expense of the mediæval ideal of the unity of the civilized world. Its effect was to make the Church in England the Church of England, a national Church, recognizing as its head the English King, using in its services the English tongue, limited in its jurisdiction to the English Courts, and fenced about with a uniformity imposed by the English legislature.

Those five chapters of Prof. Pollard's are conspicuously good—well informed, well thought out, and fluently and lucidly presented. "The Reformation in France" is treated by Mr. A. A. Tilley; "The Helvetic Reformation," by Principal Whitney, of the Bishop's College, Lennoxville, Quebec; "The Catholic South" and "The Scandinavian North," by Prof. (now Bishop) Collins—all of them comprehensively and efficiently.

The important chapters on "Henry VIII." and on "Philip and Mary" are severally furnished by the experienced pens of Dr. Gairdner and Mr. Bass Mullinger—names that carry their own guarantee. Dr. Gairdner, while not denying Wolsey's faults, signalizes "his splendid political abilities," and says that "he raised England from the rank of a second-rate Power among the nations." "The reign of Henry VIII.," he states, "has left deeper marks on succeeding ages than any other reign in English history . . . Henry VIII. was really a monarch of consummate ability, who, if his course had not been misdirected by passion and selfishness, would have left a name behind him as the very founder of England's greatness." To the decisive breach with Rome he "was driven with some reluctance": "he made Cranmer a sort of insular Pope," but "the innovations actually made consisted in little more than the authorization of an English Bible, the publication of some formularies to which little objection could be taken, and the first use of an English Litany." "The Anglican Settlement and the Scottish Reformation" are handled most capably by Prof. Maitland; Mr. R. V. Laurence deals with "The Church and Reform"—a chapter of large scope and interest; and Dr. Fairbairn treats of "Calvin and the Reformed Church," and closes the volume with a powerful review of the "Tendencies of European Thought in the Age of the Reformation."

The Romantic Movement in France.

Main Currents in Nineteenth-Century Literature. By Georg Brandes. Vol. V.: *The Romantic School in France.* (12s. Heinemann.)

The fifth volume of the translation of Dr. Brandes's great work, which originally appeared in the seventies, carries on the history of French literature commenced in the first volume (the Emigrant Literature) and continued in the third (the Reaction in France). The political background of the Romantic movement was not an inspiring one, but its very dullness stimulated the rising generation. The reaction under Charles X. and the ascendency of the *bourgeoisie* under Louis Philippe were equally the objects of their aversion. "During the Revolution," says Dr. Brandes, "they had worshipped liberty; under Napoleon martial glory; now they worshipped art." Literature came to be closely associated with painting and sculpture, and to be itself reckoned as art; creative power was esteemed above the "reason" and philosophy characteristic of the eighteenth century. The influences, foreign and domestic, which led up to Romanticism, have often been enumerated: Dr. Brandes dwells especially on two of them—the poetry of André Chénier, published long after his death, and the political and social ideas of Saint Simon, ideas which, he tells us, inspired in different ways men as diverse as Michel Chevalier, Augustin Thierry, and Auguste Comte. We are accustomed to think of the drama as *par excellence* the battle-ground of the Romantic movement: the preface to "Cromwell" and the fight that raged round the representation of "Hernani" are among the most familiar incidents of literary history. In the volume before us it occupies but a small place; the main current, to quote the title of the book, ran in other channels, and it is on poetry, fiction, and criticism that the chief stress is laid. "Romanticism," the author tells us, "was too essentially lyric to produce dramatic works of enduring value"—a suggestive, if somewhat too sweeping, verdict.

To begin with poetry. De Vigny is only just noticed; and so much of Victor Hugo's work lies outside the period that comparatively little space is given to him. In a previous volume the "Odes et Ballades" had been dealt with; in this volume "Les Orientales" is taken as his typical work, and is the subject of some acute and eloquent criticism. "Victor Hugo," it begins, "took the verse which André Chénier had created—that pellucid medium of pure beauty—and when he had breathed upon it it gleamed with all the colours of the rainbow." From Victor Hugo the natural transition is to De Musset, who early renounced all formal alliance with the Romanticists, and who, in the eyes of many Frenchmen, is the greater poet of the two. Dr. Brandes investigates the grounds of this preference. Hugo, no doubt, was a greater master of his craft, he had far nobler ideals, and possessed the qualities of a leader. De Musset was, indeed, for some time, the type of

> Some wild poet, when he works
> Without a conscience or an aim.

But, granting that the unsavoury character of his subjects—and he is far too partial to dissolute blackguards—can be tolerated, he is more genuinely lyric, more frankly human, less of a rhetorician than Hugo. Moreover, he has *esprit*, which Hugo has not. De Musset's later work, on which his brief friendship with George Sand had a marked influence, does show distinct progress in moral purpose, and less affectation of world-weariness. To this period belong his charming stories and plays, of which "On ne badine pas avec l'amour" is perhaps the best known.

Passing to fiction, George Sand and Balzac form the subject of interesting chapters. An extract from an account given by George Sand of a conversation with her great contemporary seems to serve as the text. "You," she said, "have the desire and the ability to paint the human being as you see him: I, on the other hand, feel impelled to paint him as I wish him to be, as I believe he ought to be." Another novelist, Henri Beyle (Stendhal), author of "Le Rouge et le Noir" and "La Chartreuse de Parme," seems, at first sight, to be quite unconnected with Romanticism. He was distinctly of the eighteenth century, and quite uninfluenced by the great Romanticists or their predecessors, André Chénier, Chateaubriand, and Madame de Staël. But as the author of "Racine et Shakespeare," published in 1822, he was their precursor, and he has in common with them the enthusiasm for energy and daring deeds, "quorum pars magna fuit," at Marengo, Jena, and Moscow, and a true Romantic aversion for the Philistine. He said of himself: "I shall be read about 1880," and he is, by his subtle analysis, one of the fathers of the modern novel. Dr. Brandes thus sums up his view of him:

> I, for my part, see in him not only one of the chief representatives of the generation of 1830, but a necessary link in the great intellectual movement of the century; for as a psychologist his successor and the continuer of his work was no less a man than Taine, and as an author his successor and disciple was Prosper Mérimée.

We have not space to dwell on the criticisms of Mérimée and Théophile Gautier, nor on the delicate appreciation of Sainte-Beuve, whose training as a poet, a novelist, and the historian of Port Royal helped to make him the founder of scientific criticism. One is inclined to think that, but for Sainte-Beuve, Dr. Brandes's own book would not have been written.

> Thanks to his reform the history of literature, which used to be a kind of secondary, inferior branch of the science of history, has become the guide of history proper—its most interesting and living part; for the literature of nations is the most attractive and most instructive material with which history has to deal.

It is difficult, in dealing with books about books, to say how far they are original and how far they resume ideas already in the air; but, in comparing this volume with one of the best of modern histories of French literature—that of M. Gustave Lanson—it seems as if the Frenchman owed some of his subtle criticism to his Danish predecessor. One fault we would find with Dr. Brandes—his eagerness to reproduce the environment of the authors he discusses leads him at times to dwell too much on episodes in their lives "sacro digna silentio."

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The Story of Commerce.

A General History of Commerce. By William Clarence Webster, Ph.D., Lecturer on Economic History in New York University. (6s. 6d. Ginn.)

With the requirements of students constantly in mind, Dr. Webster has "tried to tell the story of commerce in a systematic manner, in order that the reader may get clear-cut and accurate pictures of the commercial growth and decay of separate nations, and an understanding of the forces—industrial, racial, and climatic—which have contributed to the steady expansion of the world's trade." He fully recognizes how much more than mere international exchange a nation's commerce is—how deeply it ramifies throughout the life of a nation. He treats in succession Ancient, Mediæval, and Early Modern Commerce (down to the end of the eighteenth century), and then the Age of Steam and the Age of Electricity. He, of course, gives special attention to the industrial and commercial progress of the United States; but that does not prevent him from dealing adequately with the development of other nations. It is interesting to note that he does not accept the view that "the slower relative increase in England's foreign commerce during the present period—especially during the past decade, as compared with that of the previous period—the actual decrease of her trade in some markets, and the increasing excess of her imports over her exports, and the much more rapid commercial expansion of the United States and Germany," show "that British foreign trade is in a state of chronic decline." He says:

> The excess of imports is not necessarily a danger, and is explained by certain circumstances that are really quite favourable—viz., by England's capitalistic supremacy and extensive carrying trade. We have also seen that while her trade is decreasing in some markets it is still gaining very rapidly in others. Although her total foreign commerce has not increased in value as rapidly during the present period as formerly, it has, nevertheless, on the whole, made remarkable progress; and, if we should consider the increase in the volume and bulk of her trade rather than its value, we should probably conclude that she has really made nearly, or quite, as rapid progress as during any previous period of like length. Furthermore, the great increase in both her imports and exports during the years 1899 and 1900 has done much to overcome arguments of "an early decline to the condition of a second-rate power." . . . On the other hand, we should remember that England could scarcely be expected to permanently maintain so rapid a rate of increase in her trade as she made during the decade of the previous period, nor so rapid a rate as that of countries like the United States and Germany, whose commerce has just begun to expand in recent years. These, and some other countries, have inevitably cut into British trade quite deeply in some markets with their competition; but it can scarcely be maintained that their commercial expansion as a whole has, thus far at least, been seriously detrimental to that of England. . . . Furthermore, those who argue that England's commerce is in a state of decline too frequently assume that other countries, like the United States and Germany, will continue indefinitely to increase their trade as rapidly as they have during the past few years; but this assumption is highly improbable for very many reasons.

All he will admit is that "the struggle between England and her rivals for the world's markets is sure to become more and more intense"; and that is all that can safely be admitted. The volume is very carefully compiled, and the judgments pronounced are cautious and level-headed. It ought to be very useful in a commercial course. References to authoritative works are appended to the several chapters. There are numerous excellent maps, and ten illustrations, showing the changes that have come over ships in the course of history.

The Theory of Integers.

Elements of the Theory of Integers. By Joseph Bowden, Ph.D., Professor of Mathematics in Adelphi College, Brooklyn. (5s. net. Macmillan.)

People generally, even the best educated and the most intellectual, are content to accept without further inquiry ready-made ideas as to number and arithmetic. Hence Dr. Bowden's work on "The Theory of Integers" will, in all probability, create an entirely new current of thought in the minds of many of his readers. In this able treatise he investigates the very foundations of the subject under consideration, and seeks to develop in a thoroughly logical manner the theory on which the leading operations of arithmetic are based. He starts from the fundamental ideas of *number*, of *equality*, and of *sum*, and from axioms chosen with a view to their possessing as a whole the essential characteristics of being necessary, sufficient, consistent, and mutually independent. In the present volume the author has only discussed the theory as applied to two types of number—the *primary* number or purely positive integer and the integer in general, which may have a positive, negative, or zero value, and which is regarded as the difference between two primary numbers. The well known laws of association, of commutation, and of distribution are established first by means of primary numbers and with reference to them alone; later, it is shown that by the adoption of suitable definitions the same laws hold for the generalized integer. A large number of very important theorems are fully demonstrated, and others are either merely enunciated or have their enunciations supplemented by a brief indication of the method of proof. The volume constitutes the first two parts of a work to be completed in the future; and the remaining portions will be devoted to the extension of the writer's investigations to *rational*, *real*, and *complex* numbers. Judging from what has been already published, the entire treatise is likely to be a valuable addition to the literature of mathematics.

A New Italian Dictionary.

An Italian and English Dictionary. By Hjalmar Edgren, Ph.D., Recent Professor of Romance Languages in the University of Nebraska, Member of the Nobel Institute of the Swedish Academy in Stockholm; assisted by Giuseppe Bico, D.C.L., of the University of Rome, and John L. Gerig, A.M., Instructor, University of Nebraska. (15s. George Bell.)

There is, indeed, no lack of Italian dictionaries; but Dr. Edgren's work will make room for itself. His idea is to produce a lexicon "based on the foremost recent authorities, and embodying a copious selection of modern words as well as important obsolete ones, presented in a practical and yet etymological form." The Italian-English part follows as its chief authority Petrocchi's "Nuovo Dizionario Scolastico," with constant reference to other works of esteem, English as well as Italian. The vocabulary is very full—quite adequate for all ordinary purposes. Irregular inflexions are carefully noted, often as titles in alphabetical order—a very helpful—arrangement. Idiomatic expressions are given liberally, and we should have gladly missed a good many unusual vocables in order to make space for more of them. Pronunciation and derivation are carefully attended to; but neither involves any great difficulty. So far as English students are concerned, the main interest of the English-Italian part lies in the fullness and accuracy of the equivalents, and on this head they will not be disappointed. We give the volume a cordial welcome. The print and the get-up are very creditable to the publishers.

GENERAL NOTICES.

CLASSICS.

"Classical Translations."—*Æschylus: The Agamemnon.* Translated from a Revised Text by Walter Headlam, Litt.D. (1s. George Bell.)

Dr. Headlam maintains at least the high reputation of the series. His task is a difficult one, and he has faced it very frankly, working in the apparent improvements of the past twenty years both in text and in interpretation. In the absence of the text he has necessarily added a considerable number of concise footnotes, showing his departures from the ordinary version, alternative meanings, and other illustrative matter. The work is done with evident care and thoroughness of scholarship, and it will prove most helpful to the student. Yet the English reader, ignorant of Greek, or perusing the translation without the Greek in mind or at hand for ready reference, will be apt to marvel at the outcome. Nobody but a translator would deliberately construct such collocations of English vocables. If the substance—to say nothing of the spirit and tone—of the great classical works is to be brought home to the English mind (in spite of non-classical detractors), our translators will have to recognize that the English language needs study as well as the classics, and, moreover, that it has capacities of expression, in prose as well as in verse, that have hitherto been strangely allowed to rust unused. English, as well as science, has a grievance against the classic. The little book is well printed on good paper and tastefully encased in paper covers.

"College Series of Latin Authors."—*Cicero: Tusculanarum Disputationum Liber Primus, et Somnium Scipionis.* Edited by Frank Ernest Rockwood, Professor of Latin in Bucknell University. (4s. 6d. Ginn.)

A very handy, serviceable, and attractive edition. Prof. Rockwood follows Müller's Teubner text, with divergences noted and explained in a careful and concise critical appendix. The introductions deal pleasantly and luminously with the literary and philosophical matters

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pertinent to the two selections, and they are unusually full and satisfactory. The notes, if occasionally elementary, perhaps err on the safer side. Generally they are instructive, and references and parallel passages are more frequent than appeals to somebody's grammar. Peculiarities of language and style are constantly marked; but the main purpose is to bring out the trend and force of the argument. The editor shows familiarity with the literature of the subject in every aspect. We shall look forward with interest to his further work on the "Tusculan Discussions." The volume is admirably printed and got up.

MATHEMATICS.

An Algebra for Junior Forms. By R. B. Morgan, B.Litt., L.C.P. (1s. 6d. Relfe.)

A very useful and well written little volume, in the compilation of which great attention has been paid to the recommendations of the Committee of the Mathematical Association with regard to the teaching of algebra. Some of the more important changes adopted have reference to the order in which the elementary portions of the science should be taught, and among these may be noted the early consideration of *negative* quantity and of graphical methods with their application. The beginner is wisely led to look on algebra as generalized arithmetic—in fact, the rules are in many instances built up as the results of investigating purely numerical examples.

Elementary Geometry, Section II. By Frank R. Barrell, M.A., B.Sc.' Professor of Mathematics, University College, Bristol. (1s. 6d' Longmans.)

The first section of Prof. Barrell's "Elementary Geometry" has already been noticed in these columns. The second deals with much of the substance of the Second, Third, Fourth, and Sixth Books of Euclid. The manner in which the author handles his subject is interesting. Algebra enters largely into the mode of demonstrating the Second and Sixth Book propositions. Although *commensurable* quantities alone find place in the formal discussion of ratio and proportion, the writer is careful to introduce the notion of *incommensurables*. Some of the constructions appear to be original. The volume is well brought out, and the diagrams are very good and clear.

Elementary Geometry. By C. Godfrey, M.A., and A. W. Siddons, M.A. (3s. 6d. Cambridge University Press.)

The scope of the work has been primarily determined by the nature of the new Schedule of Geometry which has lately replaced the older syllabus used at Cambridge. The book, however, is not only adapted for students intending to take a Cambridge University course; it will also serve the purpose of candidates reading for Oxford Responsions and University of London examinations. The volume is more important than most of those of the new type which have already appeared, and it promises to be a useful text-book. It fulfils the three-fold object of providing instruction in experimental, in practical, and in theoretical geometry, and it essentially covers the ground familiar to readers of the first Four and the Sixth Books of Euclid. It has been well brought out, and contains an excellent series of diagrams. The exercises are varied in character and detail, and they are very numerous. In the portions dealing with *constructions*, although the work is not free from the defects generally noticeable in books on elementary practical geometry, yet there is evidence of a more strenuous effort to secure accuracy of expression.

A New Geometry for Junior Forms. By S. Barnard, M.A., and J. M. Child, B.A. (2s. 6d. Macmillan.)

A separate publication of the more elementary portions of the "New Geometry for Schools" recently published by the authors and favourably reviewed in these columns. Some suitable additions have been made, and the volume, which should be welcome, is now a text-book of moderate size, comprising a course of geometry calculated to place the reader on the same level as candidates successful in passing the Oxford and Cambridge Junior Local and other similar examinations.

ENGLISH LANGUAGE.

An Old English Grammar. By Eduard Sievers, Professor of Germanic Philology in the University of Leipzig. Translated and edited by Albert S. Cook, Professor of the English Language and Literature in Yale University. Third Edition. (5s. Ginn.)

Prof. Cook finds it difficult to keep up with Prof. Sievers: the third English edition dates five years later than the third German edition. The author scarcely did himself justice with this edition: he started with the idea of giving a mere reimpression of the second edition, "instead of the complete revision which, though it had been in hand for a long time, was only partly finished"; and presently, finding that this plan would not do, he "rectified and expanded the old text" as best he could under pressure of the printers. However, both in the phonology and in the inflexion he made numerous alterations, all for the better. Prof. Cook has again done devoted service to the work. It is, of course, indispensable to the serious student. The publishers deserve a special word of credit for the clear and accurate printing of much difficult "copy," and for the substantial and agreeable get-up.

A Primer of Historical English Grammar. By Bertha M. Skeat, Ph.D. (Zürich). (2s. 6d. Blackie.)

Miss Skeat intends the volume for "the Upper Forms in a Public School," and professes to give "sufficient information for the guidance of students preparing for the London Matriculation." She has carefully selected the topics of chief interest and importance, and the illustrative examples, avoiding excessive detail. She explains the relation of English to other languages, the development of it in England, the growth of the vocabulary, the vowel and consonant changes, derivation and inflexion. The arrangement and the statement are lucid, and the book generally is quite trustworthy and suitable to its purpose. We should hope, however, that it will be studied more by way of frequent reference than of systematic reading—at any rate, in the first instance.

ANNOTATED ENGLISH CLASSICS.

Bacon. *Selected Essays.* Edited by A. E. Roberts, M.A. (George Bell. English Classics.)

Mr. Roberts furnishes a good biographical and literary introduction and sensible and scholarly notes to eight Essays, having primarily in view the requirements of pupil-teachers sitting for the King's Scholarship. An appendix treats briefly and usefully of differences between Bacon's English and ours. The publishers give good paper, round and clear type, and tasteful and substantial binding.

Burke. *Thoughts on the Cause of the Present Discontents.* Edited by J. H. Boardman, B.A., L.C.P. (2s. net. Normal Correspondence College Press.)

The introduction deals generally and sufficiently with matters biographical, political, and literary. The notes are full and serviceable, although a good many explanations of vocables seem unnecessary. Appendixes contain short biographies of leading statesmen of the period, test papers, &c. The edition will be helpful.

Chaucer. *The Knight's Tale.* Edited by Alfred W. Pollard. (2s. 6d. Macmillan. English Classics.)

Mr. Pollard has expended much scholarly labour on the poem. In the introduction and notes he has "tried to illustrate Chaucer's methods as a story teller at a particularly interesting stage of his career, and in doing this to show in some detail what was the degree of his indebtedness to Boccaccio's 'Teseide.'" This is very well for advanced students by way of "easy introduction to poetical criticism," although the study would still be on a narrow basis unless the students could follow the original under comparison. But the plan introduces a great deal that less advanced readers will probably skip. There is a useful glossary, and the type and get up are good.

Shakespeare. (1) *The Merchant of Venice*, edited by R. Scott, M.A., Professor of English Literature, Wilson College, Bombay. (Cooper: Bombay). (2) *Hamlet*, edited by Oliphant Smeaton, M.A.; and (3) *As You Like It*, edited by Flora Masson. (1s. 4d. each. Dent. Shakespeare for Schools.) (4) *Julius Cæsar*, edited by David Patrick, M.A., LL.D., and Thomas Kirkup, M.A.; and (5) *Much Ado about Nothing*, edited by T. E. Margerison, M.A. (1s. 6d. each. Chambers. The Academy Shakespeare.)

(1) Prof. Scott, in a long literary introduction (64 pages), deals amply with the date, construction, lessons, and characters of the play, and sketches the life and work of the author. The notes are very full, no doubt from special regard to Indian pupils; but such as seem superfluous for tolerably advanced classes here would be helpful to less advanced classes, and they are all carefully and ably presented. Additional illustrative matter is given in appendixes. A very instructive edition, on bad paper. (2) and (3) are both excellent additions to the series, the introductions being specially good, and notes concise and to the point. (2) has six illustrations and coloured frontispiece by Patten Wilson, and (3) has seven illustrations and coloured frontispiece by Dora Curtis, while both have many other illustrations from contemporary prints. The get up is in all points agreeably artistic. (4) and (5) are very good examples of the new series, the quality of which is guaranteed by the general editorship of Dr. Patrick. The introductions and notes handle adequately and judiciously the literary and philological elements, with special purpose "to bring out more clearly the meaning of the author and the spirit of the play, as well as to train the student in the right understanding and appreciation of Shakespeare's English." The type is clear, and the get up is both agreeable and substantial.

ENGLISH READERS.

To the "Ludgate Standard-Authors Readers" have been added two more volumes, attractive in matter, printed in bold type, and firmly bound: (1) *The Children of the New Forest* (Captain Marryat), with thirty-nine illustrations by Sir John Gilbert, R.A., and Paul Hardy; and (2) *Our Village* (Miss Mitford), with sixty illustrations. (1s. 6d. each, Routledge.) Both volumes have some useful explanatory matter in appendix.

The "Ludgate Nature-Study Readers" form three books (1s., 1s., 1s. 3d., Routledge), edited with much care and judgment by John C. Medd, M.A. They consist of some forty lessons each, by writers of special knowledge and (for the most part) of special educational experience, on familiar natural objects or aspects of Nature. "One

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consistent purpose runs through the three volumes—namely, to emphasize the fact that opportunities for Nature-study abound on every side, to illustrate the wide range which it now covers in schools of varying types and grades, and to indicate to teachers courses which they may pursue with a minimum of inconvenience and expense." The books are well calculated to stimulate observation, thoughtfulness, and inquiry; and they are excellently printed, illustrated, and got up. The series will, no doubt, be very cordially welcomed. The series is followed up by *The Frank Buckland Reader* (1s. 6d., Routledge), which consists of selected readings from the famous naturalist's "Curiosities of Natural History," systematically arranged, briefly annotated, and furnished with seventy-four illustrations. This is a kind of book that children would read with interest by themselves.

"The Standard Second Reader," edited by Isaac K. Funk, LL.D., and Montrose J. Moses, B.S. (Funk & Wagnalls), contains interesting lessons, and is liberally and attractively illustrated (partly in colour). Much use is made of phonetics—with but doubtful advantage, we are inclined to think; only teachers can take their own course in regard to them.

Dr. W. Peterson, C.M.G., LL.D., has now combined his "Junior" and "Senior" volumes into *A School Poetry Book* (3s. 6d., Longmans)—a handsome and substantial collection. It was a worthy aim "to keep in view the tastes and sympathies of both the branches of the English-speaking people." We hope the pieces will escape the processes of parsing and analysis, and be simply read, or recited (in the good old sense, and not in the American sense), and in many cases committed to memory. Dr. Peterson aptly quotes Matthew Arnold's remark that the learning of good poetry is a "discipline which works deeper than any other discipline in the range of work of our schools; more than any other, too, it works of itself." A well considered and attractive selection.

We can now fill up the gap in our notice of the *Junior Country Readers* (by H. B. M. Buchanan and R. R. C. Gregory) in our April issue. No. II. (1s. 2d., Macmillan) consists of "More True Animal Stories"—"stories of familiar wild animals common to our English woodlands and meadows"—through which habits and characteristics of the animals are unobtrusively and effectively indicated. Spelling and transcription exercises follow the lessons. There are twenty-nine illustrations, appropriate and well reproduced.

"The Youth's Companion" series has developed an additional branch—"The World's Progress Readers," of which two volumes have recently appeared: (1) *Triumphs of Science*, and (2) *Industries of To-Day*, both edited by M. A. L. Lane (1s. each, Ginn). The subjects are judiciously selected, interestingly written (mostly by specialists), well printed, liberally illustrated, and excellently got up.

The First Infant Reader, in McDougall's "Alexandra" series (6d., cloth), relies on the interest of the stories and on the illustrations (many in colour) rather than on graduation of difficulties of the language, though these will have been partly got over in the primers. The present volume is fresh and attractive.

The Story of the East Country, by E. S. Symes, who has already written of the North Country, is an excellent addition to Mr. Edward Arnold's series of "Local Readers" (1s. 6d.). The Fenland Monasteries, the Draining of the Fens, the Norfolk Broads, the Great Forest, the East Coast Fisheries (Yarmouth bloaters), Stourbridge Fair, the important towns, castles, &c., afford abundant material, historical and social. The points are well selected and the text is pleasantly written, and the illustrations are numerous and good.

MODERN LANGUAGES.

(1) *How to Teach a Foreign Language.* By Otto Jespersen, Ph.D., Professor of English in the University of Copenhagen. Translated from the Danish original by Sophia Yhlen-Olsen Bertelsen, M.A. (3s. 6d. Swan Sonnenschein.) (2) *L'Enseignement vivant des Langues vivantes.* Par J. Lecoq, Professeur Agrégé de l'Université. (Paris: Edouard Cornély.)

(1) Prof. Jespersen, who is already well-known to students of English, hopes "to pay off a little of the debt he owes to England and to many Englishmen" by the present exposition of his views. Originally his book was written with Danish schools and Danish methods more or less exclusively in mind, and consequently he has cut out such parts as seemed less applicable to English methods. "Now," he says, "the really important thing is less the destruction of bad old methods than a positive indication of the new ways to be followed if we are to have thoroughly efficient teaching in modern languages." Accordingly, he is positive rather than destructive, although he is not a little destructive. He still has his fling at the disconnected sentences about "the garden of the uncle" and "the carriage of the aunt of the friend." Generally he proceeds on the best modern lines, and considers the character of reading selections, the way they should be dealt with in the class-room, the graduation of materials, phonetics, translation and re-translation, and so forth. Incidentally, there are criticisms of more or less popular methods. The little book is written in sprightly and interesting fashion, and will be found very serviceable and suggestive to teachers.

(2) M. Lecoq does not write "pour les maîtres, pour les gens du métier." He will not go into the battle raging between "les partisans des diverses méthodes." "Ce qui me préoccupe," he says, "c'est ce que peut et doit penser l'honnête père de famille, le brave homme qui voudrait bien procurer à son enfant la meilleure éducation possible, et la plus utile, et qui, en échange des sacrifices parfois très lourds qu'il s'impose, en demande vulgairement, prosaïquement, 'pour son argent.' C'est lui que je voudrais éclairer et rassurer." He carries out his project with great vivacity and vigour, not indeed searching for the best method, or inquiring where the best method should lead to, but rather criticising the latest official syllabuses and speculating on the results that may be reasonably expected from them. At length, however, he reaches "la méthode directe," and explains it and its applications and possibilities at every educational stage. "Je suis, en ce qui me concerne, plainement convaincu que les résultats espérés seront obtenus, que la méthode se justifiera par les faits. A mes yeux, c'est un point acquis, sur lequel il est d'ailleurs oiseux de discuter." The whole book is racy and interesting.

Un Episode de Waterloo: Extrait de La Chartreuse de Parme. Par "Stendhal." Adapted and Edited by Maurice A. Gerothwohl, B.Phil., L. ès L., F.R.S.L. (2s. Murray.)

The narrative is simple and engages the interest, a good deal of dialogue being interspersed. Appended is a good account of the life and works of the author, as well as some useful grammatical notes and an index of military terms. Occasional footnotes are given in French. The type is good. There seem to be misprints on page 16, line 19; page 27, line 19; page 34, line 14; page 44, line 2; page 59, line 21—insignificant essentially, but they might just as well be rectified.

HISTORY.

A History of the Middle Ages. By Dana Carleton Munro, Professor of European History, University of Wisconsin. (4s. net. Appletons. Twentieth Century Text-Books.)

Prof. Munro emphasizes three main subjects: "first, the work of the Christian Church, the greatest of the civilizing agencies; second, the debt which we owe to the Byzantine and Arabic civilizations; third, the life of the times." The volume is but a slim one, and the author succeeds in presenting a sharp outline by characteristic decisiveness of statement as well as of selection. Especially useful are the chapters devoted to the social side of existence—the monastic orders, the life of the nobles, the life of the people, schools and universities. The enforced brevity sometimes leads, inevitably, to inadequacy of statement; but otherwise the presentment is generally good, pointed, and effective. Brief references are added to the chapters; and there are 12 useful maps, 9 dynastic tables, and some 60 illustrations, judiciously selected and well reproduced.

A History of Modern Europe. By Merrick Whitcomb, Professor of History, University of Cincinnati. (4s. 6d. net. Appletons. Twentieth Century Text-Books.)

Prof. Whitcomb differentiates his treatment by laying greater emphasis upon "the Contemporary Period," and upon the parts of the earlier history that bear more directly upon it. At the Congress of Vienna, therefore, he has still in hand one half of his space. Still, he handicaps himself with sketches of the history of the minor States, and with "source reviews" at the end of chapters—good things in their way, but hampering the main business. On the whole, however, Prof. Whitcomb gives an effective grip of the general trend of modern European development. At the same time, his work is cast on such different lines from Mr. Myers's second volume that the two are rather complementary than mutually exclusive. There are at least 150 illustrations, including some good maps and scenes and many portraits, though some of the portraits are not the best available nor yet well reproduced.

EDUCATION.

Education in accordance with Natural Law. By Charles B. Ingham. (Novello.)

Mr. Ingham modestly describes his book as "suggestions for the consideration of parents, teachers, and social reformers." He says "education works in an area in which natural energy or force is the essential factor," and so is "an effort to obtain, by devised arrangements, the fullest manifestation of the power and possibilities underlying physical and physiological existence." Men have looked too much upon results perceivable and measurable, and have been too anxious for speedy results. But "the problem is not one to be solved by ideas or views, or even theories, however specious: it is a search for facts, the inquiry being 'What are the *precise external conditions* in which these subtle forces, manifest in physiological and psychological action, and constituting the essence of individual existence, will most fully exhibit themselves for the purpose of evolving personal efficiency and completeness? This is the essential problem to be solved in education.'" Mr. Ingham, however, "has not dared to attempt" an answer: he contents himself with the negative work of "pointing out some prevalent views and practices which, on the surface very plausible, are, nevertheless, not in accordance with natural law, and are accountable for much disastrous mischief." The little volume is

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thoughtful, earnest, and unpretending; but it embodies more suggestive views than many another work of higher professions.

Short Studies in Education in Scotland. By John Clarke, Lecturer on Education in the University of Aberdeen. (3s. 6d. net. Longmans.)

Mr. Clarke first sketches the history of the existing classes of educational institutions and reviews the governing bodies and funds in order to catch the general trend of development. Elementary education, he finds, "is fairly well organized, and in many respects highly efficient." But "in the field of secondary education chaos reigns supreme; multiplicity of agency is aggravated by insecurity of resources"; and "nothing short of legislation can clear up the situation." How, then, shall order be evolved out of this chaos? Mr. Clarke discusses the matter in considerable detail, and at length sketches a plan of his own, and finally deals with some of the outstanding problems that will face the renovated Local Authority. The work is well informed and impartial in argument, and it will be usefully suggestive towards a conclusive solution.

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MATHEMATICS.

15359. (Robt. W. D. Christie.)—Without the use of the method of continued fractions, solve the equation $X^2-149Y^2=1$, and generalize your method.

Solutions (I.) *by* Lt.-Col. Allan Cunningham, R.E.; (II.) *by* R. F. Davis, M.A.; (III.) *by* A. H. Bell.

(III.) Let us first consider the general equation $x^2-Ny^2=\pm1$, and assume

$$Ny^2+1=x^2=(Nmy/n-1)^2 \text{ and } y=2mn/(Nm^2-n^2)\ [x=(Nmy/n)\pm1] \quad \ldots\ldots\ldots\ldots(1).$$

To have integral values of y, Nm^2-n^2 must be found a factor of $2mn$; when it is one, by transposition we have a solution of the proposed equation for the condition -1. Now

$$Nm^2=n^2+d=(n+1)^2-d' \quad \ldots\ldots\ldots\ldots(2),$$

by taking successively $m=1, 2, 3, \ldots$, discloses the law of development, and it will be found that the smallest values of d return at equal intervals, alternately changing signs, but the corresponding values of m, n have increased in a uniform arithmetical ratio. The smallest values of the d's occur at a change of signs in the series, which we call convergent differences, C.D. This series is one of two differences, and to develop the three series of m, n, d require three terms of (2), and they have these relations with each other. Let L and F be written for last term of a series and first term of next, and A.S. for an arithmetical series, D for difference.

No. of term.	Diff.	0,	1, ...,	Diff.,	L. and F.
A.S. m =	m'''	m +	m'	m^0,	m''
A.S. n =	n'''	n +	n'	n^0,	n''
C.D. =	$(\pm d''')$	$(\pm d)$,	$(\mp d')$	$(\mp d^0)$,	$(\pm d'') : (\pm d^{iv})$
1st Diff. =	$(\mp d')-(\pm d)$	D_1,	D'_1	$D_1{}^0$	D_1'' : $D_1{}^{iv}$
2nd Diff. =	$(\pm 2d'')$	$(\pm D_2)$,	D'_2	$(\mp D_2{}^0)$,	$(\mp 2d^0)$

$[D_2{}^0=3d^0-d''', \text{ where } d''' \text{ and } d^0 \text{ belong to two consecutive diff. terms}]$ .....(3).

The difference term supplies the ratios for extending a triple series; this series terminates when the series of d's changes signs; the last term is the first term of the next series, and the preceding term provides the ratios for extending it, &c. Where the same C.D. with a change of sign appears in the next series we find the middle of the development, and it can be proved that, if two such terms are represented by

m^0, m, then $q=m^2+m^{0^2}$; if by n^0, n, then $p=mn+m^0n^0$, the end of cycle; if by $+d^0$, $-d^0$, then 1 .....(4).

It is observed that m''', n''' are the common differences for the m', n' of the first term in (3) respectively; also the sign of d''' in this difference term must be opposite to that of the first term; and twice this d''' is D_2. Also in developing the triple series as shown in (3), the next to the last term becomes the difference term for the next series, by supplying an intermediate ($D_2{}^0$); the initial terms 0 and 1 are omitted, and the second term becomes the first term of the new series. This initial of the beginning of the development of a new series in the d's explains how the formula is obtained for this intermediate ($D_2{}^0$), and why we immediately extend the triple series by taking the last term for the first term of the next series. In commencing a triple series by means of (2) it is only necessary to select such initial terms as have the conditions given in (3), and there need be no hesitancy then in arriving at the true and final results sought.

The solution of the general indeterminate equation of the second degree as given above in (1) represents the method used by Diophantus, and ordinarily these formulæ are as difficult to determine as the original equation. By abridging the development still more than as here shown, it is possible to arrive at the values of x, y much more easily than by any other known method.

Now consider the solution of $X^2-149Y^2=1$, in whole numbers without the aid of continued fractions.—We have, by (2),

N. m^2	n^2+d	n'^2-d'
$149\cdot1^2=$	$12^2+5=$	$13^2-20,$
$149\cdot2^2=$	...	$=25^2-29,$
$149\cdot3^2=$	...	$=37^2-28.$
$149\cdot4^2=$	...	$=49^2-17,$
$149\cdot5^2=61^2+4$		

....(5).

On account of the small d's we choose this last for the difference term, and the $12+5=0$ term, their difference, shows that $49-17$ must be the first term to commence the triple series (3); then

No.	Diff.	0	1	2	3	4	5	Diff.	7 & 1
Series m,	5 =	1,	+4,	...,	...,	...,	...,	29,	34:
,, n,	61 =	12,	+49,	...,	...,	...,	...,	354,	415:
,, d,	+4	+5,	−17,	−31,	−37,	−35,	−25,	−7,	+19:
D_1	= −22,	−14,	−6,	+2,	+10,	+18,	+26,	+1:	
D_2, 2.4,	+8,	+8,	+8,	+8,	+8,	+8:	(−25):	−14:	

Second Series.

2	3
...,	92,
...,	1123,
+20,	+7,
−13,	

by (3), $(-25)=-3\times7-4$ .....(6).

The series of d ends at the seventh term, and of the arithmetical series m, n, whose common differences are 5, 61, we need only the difference and the seventh terms; continuing the d series, until finding the same d, 7 with the sign changed shows the middle of the development (4); then the formulæ give

$$m=q=92^2+29^2=9305,\ n=p=92\cdot1123+29\cdot354=113582,\ d=+1 \quad \ldots\ldots\ldots\ldots(7).$$

These values $n=x$, $m=y$ satisfy the equation $x^2-149y^2=-1$. When these values of m, n are substituted in formulæ (1) we have the solution of the proposed equation

$$y=2mn=2\cdot9305\cdot113582=2113761020,$$
$$x=2\cdot149\cdot9305^2-1=25801741449.$$

The triple series could have commenced with $25-29$ for difference term; then (3) A.S. m, $2=1+1$, A.S. n, $25=13+12$, and series d is $-29, -20, +5$, $D=-58$, and developed by the above method will soon merge into the development as given. When (D^0) causes a change of signs immediately the series ends, and a new one commences, which requires a new (D^0), but is used but once in commencing a series.

15490. (R. Tucker, M.A.)—Find the envelope of a parabola which cuts a given parabola in four points three of which are given co-normal points.

Solutions (I.) *by* Professor Sanjána, M.A.; (II.) *by the* Proposer.

(I.) Let the given parabola be $y^2=4ax$, the other

$$(x+py)^2+2gx+2fy+c=0.$$

The ordinates of the four intersections are given by

$$y^4+8apy^3+(16a^2p^2+8ag)\,y^2+32a^2fy+16a^2c=0.$$

If m be the tangent of the angle made by the normal at a point with the axis, the ordinate of the point is $-2am$; hence, if m_1, m_2, m_3 be the co-normals and m the fourth point, we have $\Sigma y_1=-8ap$, so that $\Sigma m_1+m=4p$. Similarly, $\Sigma m_1m_2+m\Sigma m_1=4p^2+2g/a$, $m\Sigma m_1m_2+m_1m_2m_3=4f/a$, and $mm_1m_2m_3=c/a^2$. But, if the normals at m_1, m_2, m_3 meet in (h, k), it is known that $\Sigma m_1=0$, $\Sigma m_1m_2=2-h/a$, $m_1m_2m_3=-k/a$; therefore $m=4p$; also $c=-4pka$, $f=2ap-ph-\frac{1}{4}k$, $g=a-\frac{1}{2}h-2ap^2$. Thus the equation of the variable parabola is

$$(x+py)^2+x\,(2a-h-4ap^2)+y\,(4ap-2ph-\tfrac{1}{4}k)-4pak=0.$$

or $$p^2\,(y^2-4ax)+2p\,(xy+2ay-hy-2ak)+x^2+2ax-hx-\tfrac{1}{4}ky=0.$$

Hence the envelope is readily seen to be

$$(xy+2ay-hy-2ak)^2=(y^2-4ax)(x^2+2ax-hx-\tfrac{1}{4}ky),$$

which is the cubic

$$xy^2\,(2a-h)+4ax^3+\tfrac{1}{4}ky^3+4ax^2\,(2a-h)-6akxy+(2a-h)^2\,y^2 -4aky\,(2a-h)+4a^2k^2=0.$$

Note.—If we do not take the three co-normal points to be fixed, we get only one relation between the four parameters p, g, f, c, and the envelope can only be represented by its differential equation.

(II.) In my paper (*Proc. Lond. Math. Soc.*, Vol. xxi., Nos. 397, 398) on "Co-normal Points" the equation to the parabola is found to be

$$(y+\lambda x)^2=\tfrac{1}{2}\,[ax\,(8+\lambda^2S_2)]+\tfrac{1}{2}\,[\lambda ay\,(2S_2+\mu\lambda)]+4\lambda\mu a^2,$$

where λ is arbitrary and $S_2=\Sigma m^2$ and $\mu=m_1m_2m_3$. If the co-normal points are fixed, then the envelope is found from

$$\lambda^2\,[x^2-(\tfrac{1}{2}S_2)\,ax-\tfrac{1}{2}\mu ay]+\lambda\,(2xy-S_2ay-4\mu a^2)+y^2-4ax=0.$$

Hence the curve is

$$2\,(2x^2-S_2ax-\mu ay)(y^2-4ax)=(2xy-S_2ay-4\mu a^2)^2,$$

a cubic curve (since the terms of the fourth degree vanish).

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15022. (Rev. Prebendary WHITWORTH, M.A.)—If n be a positive integer, show that

$$1-\frac{2n}{1.3}+\frac{2^2n(n-1)}{1.3.5}-\frac{2^3n(n-1)(n-2)}{1.3.5.7}+\ldots=\frac{1}{2n+1},$$

and that

$$1-\frac{n}{1.3}+\frac{n(n-1)}{1.3.5}-\frac{n(n-1)(n-2)}{1.3.5.7}+\ldots=\frac{1}{2n+1}\Sigma_0^n\left(\frac{C_x^n}{C_{2x}^{2n}}\right).$$

Solution by SOLIDUS.

The first part is proved directly by continued application of the identity

$$\frac{1}{2n+1}=\frac{1}{2r+1}-\frac{2(n-r)}{2r+1}\cdot\frac{1}{2n+1},$$

putting successively $r=0, 1, 2, \ldots$. Thus

$$\frac{1}{2n+1}=1-\frac{2n}{1}\cdot\frac{1}{2n+1}=1-\frac{2n}{1}\left(\frac{1}{3}-\frac{2(n-1)}{3}\cdot\frac{1}{2n+1}\right)$$

$$=1-\frac{2n}{1.3}+\frac{2^2n(n-1)}{1.3}\left(\frac{1}{5}-\frac{2(n-2)}{5}\cdot\frac{1}{2n+1}\right)$$

$$=1-\frac{2n}{1.3}+\frac{2^2n(n-1)}{1.3.5}-\frac{2^3n(n-1)(n-2)}{1.3.5.7}\cdot\frac{1}{2n+1},$$

and so on.

To prove the second part, note that the series $1-\frac{n}{3}+\frac{n(n-1)}{3.5}-\ldots$ is a particular case of the hypergeometric series, being $=F(1, -n, \frac{3}{2}, \frac{1}{2})$, while the series $\Sigma_0^n\frac{C_x^n}{C_{2x}^{2n}}$ which may be written

$$1+\frac{1}{2n-1}+\frac{1.3}{(2n-1)(2n-3)}+\ldots \text{ is } =F(1, \tfrac{1}{2}, \tfrac{1}{2}-n, -1).$$

Now one of the standard identities in connexion with hypergeometric series may be written (see Forsyth, *Diff. Eq.*, 1st ed., § 127)

$$Y_1=M_5Y_5+N_5Y_6,$$

where $M_5\equiv\frac{\Pi(\gamma-1)\Pi(\beta-\alpha-1)}{\Pi(\beta-1)\Pi(\gamma-\alpha-1)}$, $N_5\equiv\frac{\Pi(\gamma-1)\Pi(\alpha-\beta-1)}{\Pi(\alpha-1)\Pi(\gamma-\beta-1)}$,

$$Y_5=y_{13}=(1-x)^{-\alpha}F[(\alpha, \gamma-\beta, \alpha-\beta+1, 1/(1-x)],$$

and $Y_1=F(\alpha, \beta, \gamma, x)$. Now putting in the values $\alpha=1$, $\beta=\frac{1}{2}$, $\gamma=\frac{1}{2}-n$, $x=-1$, these relations reduce to the following :—

$$M_5=\frac{\Pi(-n-\frac{1}{2})\Pi(-\frac{3}{2})}{\Pi(-\frac{1}{2})\Pi(-n-\frac{3}{2})}=\frac{-n-\frac{1}{2}}{-\frac{1}{2}}=2n+1,$$

$$N_5=\frac{\Pi(-n-\frac{1}{2})\Pi(-\frac{1}{2})}{\Pi(0)\Pi(-n-1)}=0,$$

$$Y_5=(1+1)^{-1}F(1, -n, \tfrac{3}{2}, \tfrac{1}{2})=\tfrac{1}{2}F(1, -n, \tfrac{3}{2}, \tfrac{1}{2}),$$

and the identity $Y_1=M_5Y_5+N_5Y_6$ becomes

$$F(1, \tfrac{1}{2}, \tfrac{1}{2}-n, -1)=\tfrac{1}{2}(2n+1)F(1, -n, \tfrac{3}{2}, \tfrac{1}{2}),$$

which again may be written

$$\Sigma_0^n\frac{C_x^n}{C_{2x}^{2n}}=\frac{2n+1}{2}\left(1-\frac{n}{3}+\frac{n(n-1)}{3.5}-\ldots\right).$$

It would seem that the particular result deduced from Forsyth's formulae is incorrect to the extent of a factor $\frac{1}{2}$. Will some reader indicate an error in the deduction, or, failing that, an error in the general formulae given by Forsyth?

It may be noted that the first part of the Question is a particular case of the well-known formula

$$F(\alpha, \beta, \gamma, 1)=\frac{\Pi(\gamma-1)\Pi(\gamma-\alpha-\beta-1)}{\Pi(\gamma-\alpha-1)\Pi(\gamma-\beta-1)},$$

as is seen by putting $\alpha=1$, $\beta=-n$, $\gamma=\frac{1}{2}$, $x=1$.

The PROPOSER solves the second part as follows :—

Let a pack of cards consist of two suits of n cards each. Let x cards be drawn. The number of ways is C_x^{2n}. The number of ways consisting only of *pairs* is $C_{\frac{1}{2}x}^n$ if x be even, and zero if x be odd.

The number of ways in which an ace is *unpaired* is C_{x-1}^{2n-2}. The number of ways in which an ace and a deuce are unpaired is $2^2C_{x-2}^{2n-4}$, and so on. Hence (*Choice and Chance*, Prop. xiv.) we have

$$C_x^{2n}-2C_1^nC_{x-1}^{2n-2}+2^2C_2^nC_{x-2}^{2n-4}-\ldots=C_{\frac{1}{2}x}^n \ (x \text{ even})$$

$$=0 \ (x \text{ odd}).$$

Divide throughout by C_x^{2n}. Then give x every integral value from 0 to $2n$; add and divide throughout by $2n+1$, and in virtue of *Choice and Chance*, Excursus, Art. 10, we have the result required.

15141. (The late Rev. G. RICHARDSON, M.A.)—If a be an edge of a tetrahedron, A the dihedral angle at that edge, Δ the area of a face, l the perpendicular distance between a pair of opposite edges, and V the volume, then $3V\Sigma(1/l^2)=\Sigma(a\cot A)$ and $9V^2\Sigma(1/l^2)=\Sigma(\Delta^2)$.

Solution by R. F. DAVIS, M.A.

Let ABC be a triangle; A, B, C its angles, and a, b, c its sides. Also let D be the vertex of a tetrahedron having ABC for its base; DA $=p$, DB $=q$, DC $=r$. Then if M, N be points in BC, DA respectively, such that MN is a minimum and therefore perpendicular to both these opposite edges (BM $=x$, DN $=y$), from

$$\Delta ABC \ldots c^2(a-x)+b^2x=a\left\{AM^2+x(a-x)\right\},$$

from $$\Delta DBC \ldots q^2(a-x)+r^2x=a\left\{DM^2+x(a-x)\right\};$$

whence $$c^2(a-x)+b^2x-q^2(a-x)-r^2x=a\left\{(p-y)^2-y^2\right\}=ap(p-2y),$$

$$(b^2+q^2-c^2-r^2)x+2apy=a(p^2+q^2-c^2).$$

Similarly from the triangles BAD, CAD, we get

$$(b^2+q^2-c^2-r^2)y+2apx=p(a^2+q^2-r^2).$$

These equations are sufficient to determine x, y, MN^2. The work is rather lengthy; but the final result is

$$MN^2\left\{4a^2p^2-(b^2+q^2-c^2-r^2)^2\right\}=144V^2,$$

which easily leads to the second part of the Question.

If α, β, γ be the trilinear co-ordinates of E the foot of the perpendicular from D on the plane of ABC,

$$a\cot(BC)+b\cot(CA)+c\cot(AB)=(a\alpha+b\beta+c\gamma)/DE=2\Delta/DE=2\Delta^2/3V.$$

There are three other similar relations, and $\Sigma a\cot(BC)=\Sigma\Delta^2/3V$.

15513. (J. MACLEOD, H.M.I.S., I.S.O.)—Using the usual notation for the ellipse, if at S a perpendicular SD to the major axis is raised equal to SP and in this perpendicular a point E is taken such that SE $=$ AN, prove that $\Delta TDE=\Delta ADS$. In what case does the tangent PT coincide with TD?

Solutions (I.) *by* G. G. MORRICE, M.D., *and* J. BLAIKIE, M.A.; (II.) *by the* PROPOSER *and* A. M. NESBITT, M.A.; (III.) *by* C. M. ROSS *and* W. SCRIMGEOUR, M.A., B.Sc.

(I.) $$CX=a/e, \quad CT=a^2/x, \quad a-ex=e(CX-x),$$

$$(a^2/x-ae)(a-x)=e(CX-x)(a^2/x-a), \quad (CT-CS)AN=CXN.AT,$$

$$ST.AN=SP.AT, \quad SP(ST-AS)=ST.AN, \quad ST(SP-AN)=AS.SP,$$

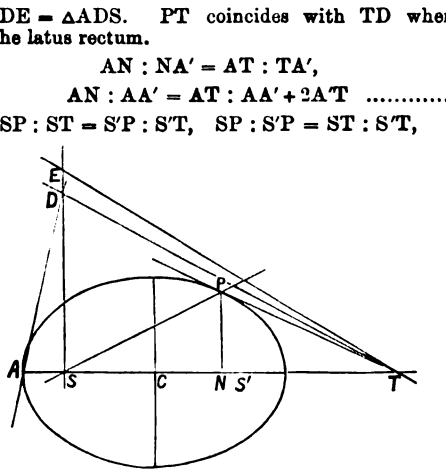
or $$\tfrac{1}{2}ST(SD-SE)=\tfrac{1}{2}SD.AS;$$

therefore $\Delta TDE=\Delta ADS$. PT coincides with TD when P is an extremity of the latus rectum.

(II.) $$AN:NA'=AT:TA',$$

$$AN:AA'=AT:AA'+2A'T \quad \ldots\ldots\ldots\ldots(1),$$

$$SP:ST=S'P:S'T, \quad SP:S'P=ST:S'T,$$



or $$SP:AA'=ST:AA'+2A'T \quad \ldots\ldots\ldots\ldots(2).$$

From (1) and (2), SP : AN $=$ ST : AT. Hence the theorem follows at once, and the tangent coincides with TD when N coincides with S.

(III.) 1. $$SD=SP=a+e.CN, \quad SE=AN=a+CN;$$

therefore $$DE=CN(1-e).$$

Again $$ST=SC+CT=a(e+a/CN).$$

Hence $$\Delta TDE=\tfrac{1}{2}CN(1-e)a(eCN+a)/CN$$

$$=\tfrac{1}{2}a(1-e)(eCN+a)=\tfrac{1}{2}AS.SD=\Delta ADS.$$

2. Again $$\frac{SD}{ST}=\frac{a+eCN}{a(e+a/CN)}=\frac{CN}{a},$$

also $$\frac{PN}{NT}=\frac{(SP^2-SN^2)^{\frac{1}{2}}}{CT-CN}=\frac{CN(1-e^2)^{\frac{1}{2}}}{(a^2-CN^2)^{\frac{1}{2}}} \text{ (after reduction).}$$

Then, if PT and TD coincide, $CN/a=[CN(1-e^2)^{\frac{1}{2}}]/(a^2-CN^2)^{\frac{1}{2}}$; there-

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fore $a^2-CN^2 = a^2-a^2e^2$; therefcre $CN = \pm ae$ = CS or CS'; *i.e.*, the tangent PT coincides with TD when the perpendicular PN passes through either focus.

15538. (W. H. Blythe, M.A.)—There are N bullets in a bag to be divided among n people. The first takes what he considers to be his share, finding one remainder which he lays aside. The second, not knowing the first has removed any of the bullets, does exactly the same thing, and each of the people in turn repeats the process. Finally, the remaining bullets are divided into n equal portions, with one remainder, each person taking his share. Show that N is of the form An^p-n+1, where A is any positive integer, and p is not less than $n+1$. Find an expression for the share of each person.

Solution by Lt.-Col. Allan Cunningham, R.E.

Let x_r = share taken by the r-th person (before final adjustment);

let N_r = number of bullets remaining after r-th operation (excluding those laid aside);

let x_r' = share received by r-th person after final adjustment;

let $\nu = (1-1/n)$, for shortness.

Then $x_1 = (N-1)/n$, $x_2 = (N_1-1)/n$, ..., $x_r = (N_{r-1}-1)/n$ ..... (1),

and $N_1 = N-x_1-1 = (N-1)-(N-1)/n = \nu(N-1)$.

Similarly, $N_2 = \nu(N_1-1) = \nu^2N-\nu^2-\nu$;

similarly, $N_3 = \nu(N_2-1) = \nu^3N-\nu^3-\nu^2-\nu$.

Lastly, $N_n = \nu^nN-(\nu^n+\nu^{n-1}+\ldots+\nu^2+\nu) = \nu^nN-\nu(\nu^n-1)/(\nu-1)$...(2).

Now let X = *additional* share given to each person on final division of the remaining (N_n+n) bullets (including the n previously laid aside).

Then $X = (N_n+n-1)/n$ .....(3).

By (2) and (3), $\nu^nN-\nu(\nu^n-1)/(\nu-1) = N_n = nX-(n-1)$.

But $\nu/(\nu-1) = -(n-1)$;

therefore $\nu^nN = nX-(n-1)-(n-1)(\nu^n-1) = nX-(n-1)\nu^n$;

therefore $N = nX/\nu^n-n+1 = n^{n+1}[X/(n-1)^n]-n+1$

$= n^{n+1}A-n+1$; [writing $A = X/(n-1)^n$], as required.

Also $x_r' = x_r+X = (N_{r-1}-1)/n+(N_n+n-1)/n$,

which, after some reduction, becomes $x_r' = (\nu^{r-1}+\nu^n)n^nA-1$.

15428. (C. M. Ross.) (Suggested by Question 15376.)—Evaluate

(1) $\int \cot x \cot 2x \cot 3x\,dx$, (2) $\int \tan x \tan 2x \tan 3x \tan 4x\,dx$;

and generalize (2).

Solution by George Scott, M.A., *and the* Proposer.

(1) To find $\int \cot x \cot 2x \cot 3x\,dx = F(x)$. Let the product of cotangents be called $F'(x)$. $\cot 3x = \cot(2x+x) = (\cot 2x \cot x-1)/(\cot 2x+\cot x)$; hence $\cot 2x \cot 3x = \cot 2x \cot x-\cot 3x \cot x-1$; therefore

$$F'(x) = \cot^2 x(\cot 2x-\cot 3x)-\cot x = \cot^2 x\,\frac{\sin x}{\sin 2x \sin 3x}-\cot x,$$

$$\sin 2x \sin 3x = 2\sin^2 x \cos x(3-4\sin^2 x);$$

therefore $$F'(x) = \frac{\cot x}{2\sin^2 x(3-4\sin^2 x)}-\cot x$$

or $$= \tfrac{1}{3}\left\{\frac{\cot x(1+\cot^2 x)^2}{3\cot^2 x-1}\right\}-\cot x;$$

therefore $$F(x) = -\tfrac{1}{3}\int\frac{(\cot x+\cot^3 x)\,d(\cot x)}{3\cot^2 x-1}-\int\cot x\,dx,$$

whence, by division,

$$F(x) = -\tfrac{1}{6}\int\cot x\,d(\cot x)-\tfrac{2}{3}\int\frac{\cot x\,d(\cot x)}{3\cot^2 x-1}-\int\cot x\,dx;$$

therefore $\int \cot x \cot 2x \cot 3x\,dx = -\frac{1}{6}\cot^2 x-\frac{1}{3}\log(3\cot^2 x-1)-\log\sin x$

[Rest in *Reprint*.

15508. (R. F. Davis, M.A.) [Suggested by Mr. C. E. Youngman's Question 15435.]—Three circles touch each other externally and touch externally the circum-circle of a given triangle ABC at A, B, C respectively. Show that their radii are $R/(\cot B+\cot C-1)$, ...

Solution by Frances E. Cave.

Let α, β, γ be the required radii. Then triangle of sides $R+\alpha$, $R+\beta$, $\alpha+\beta$ has angle 2C opposite to third side; therefore

$$\operatorname{cosec}^2 C = [(R+\alpha)(R+\beta)]/\alpha\beta,$$

with two similar equations; therefore

$(R+\alpha)/\alpha = (\operatorname{cosec} C \operatorname{cosec} B)/\operatorname{cosec} A$ (since R and α are positive)

$= \cot B+\cot C$;

therefore $\alpha = R/(\cot B+\cot C-1)$.

QUESTIONS FOR SOLUTION.

15570. (S. C. Bagchi, B.A.)—At noon, on an equinoctial day, a spherical shell of 6″ diameter was projected from a cannon fixed vertically to the horizontal ground of a place on the Equator. The bomb burst in mid-air, casting a shadow bounded by $x^2 = 9(1-2x^2-2y^2)(8x^2+8y^2-5)^2$, $z = -180''$. Show that a portion was torn off along a curve making a constant angle 60° with the vertical diameter of the shell. (The origin of reference being the centre of the sphere and z-axis measured upwards.)

15571. (Professor Neuberg.)—Soient Ox, Oy, Oz trois axes rectangulaires. On prend sur Ox, Oy les longueurs $OA = a$, $OB = b$. Soit C un point quelconque de la droite AB. Trouver l'équation de la surface engendrée par une ellipse qui a pour demi-axes OC, OD, la droite OD étant prise sur l'axe OZ et égale à K . OC, K étant un nombre donné.

15572. (Professor E. B. Escott.)—Find two large consecutive numbers ($> 10^{17}$) all of whose prime factors are less than 200. Examples:

$$\begin{cases} a^2 = 306 \cdot 331 \cdot 585^2 = 5^2 \cdot 7^8 \cdot 17^2 \cdot 19^2 \cdot 79^2, \\ a^2-1 = 2^7 \cdot 3 \cdot 11^2 \cdot 13 \cdot 31 \cdot 37 \cdot 83 \cdot 101 \cdot 107 \cdot 151; \end{cases}$$

$$\begin{cases} a^2 = 315 \cdot 630 \cdot 756^2 = 17766^4 = 2^4 \cdot 3^{12} \cdot 7^4 \cdot 47^4, \\ a^2-1 = 5 \cdot 11 \cdot 13 \cdot 17 \cdot 19 \cdot 37 \cdot 73 \cdot 89 \cdot 101 \cdot 109 \cdot 163; \end{cases}$$

$$\begin{cases} a^2 = 940 \cdot 737006^2 = 2^2 \cdot 3^4 \cdot 11^4 \cdot 19^2 \cdot 127^2 \cdot 179^2, \\ a^2-1 = 5 \cdot 7 \cdot 13 \cdot 17 \cdot 23 \cdot 31 \cdot 41 \cdot 47 \cdot 59 \cdot 71 \cdot 103 \cdot 193. \end{cases}$$

15573. (Lt.-Col. Allan Cunningham, R.E.)—Factorise completely into *prime* factors $N = (208^{13}-1)$. [This contains 30 figures.]

15574. (Robt. W. D. Christie.)—Find an infinite number of positive integral values of X *having the same* Y in the Pellian equation

$$X_n^2-PY^2 = -1;$$

e.g., $70^2-29 \cdot 13^2 = -1$, $746^2-3293 \cdot 13^2 = -1$, ...

15575. (R. Chartres.)—If $mx-1 = r \cdot s$, $x > 3$, then, if (1) r and s are consecutive integers, r the greater, $1/x$ will give six recurring (*bona fide*) figures in the scales $\left(\frac{nx+r}{-s}\right)$, and three recurring (*bona fide*) figures in the scales $\left(\frac{nx+s}{-r}\right)$; (2) but, if $r = s$, $1/x$ will give four such figures in the scales $(nx \pm r)$. Proof required without the modern theory of numbers.

15576. (Solidus.)—Given

$$(c+x)(c-y) = (\mu^2-1)(1-c^2), \quad (z-x)(z+y) = (\mu^2-1)(1-z^2);$$

prove that the equations got by interchanging x, y, and μ with c, z, and $1/\mu$ must also hold good.

15577. (Professor H. Langhorne Orchard, M.A., B.Sc.)—Find (1) the sum of n terms of the series

$$0+128+4374+49152+312500+1399680+\ldots;$$

and (2) the sum of n terms of the series in (1) added to n terms of the series $1+128+2187+16384+78125+279936+\ldots$.

15578. (C. M. Ross.)—Find $\underset{n=\infty}{\mathrm{L}}\,[(1+a)(1+a^2)(1+a^3)\ldots(1+a^n)]^{1/n}$.

15579. (*Communicated by* Rev. T. Wiggins, B.A.)—Sum to infinity the series $\sin^2\theta-3/2\sin^2 2\theta+3^2/3\sin^2 3\theta-3^3/4\sin^2 4\theta+\ldots$.

[*Note.*—This was one of several series proposed for solution at an examination conducted by the Board of Education. Is the series convergent?]

15580. (Professor Sanjána, M.A.)—A parabola has contact of the second order with $y^2 = 4ax$ at the vertex, and cuts it again at the point whose normal is inclined at $\tan^{-1}m$ to the axis. Prove that its equation is $(4x+my)^2 = 4am^2x$.

15581. (C. E. Youngman, M.A.)—If A, B, C, D, E be five points on a rectangular hyperbola, A, B, C, D concyclic, DD′ a diameter of the circle, EE′ of the hyperbola, then the conics ABCD′E and ABCD′E′ will be ellipse and hyperbola, with their axes parallel and proportional.

15582. (W. Scrimgeour, M.A., B.Sc.)—QSQ′ is a focal chord of a conic. PG, the normal at a point P on the curve, is perpendicular to QSQ′, and meets the axis in G. Prove that $QS \cdot Q'S = PG^2$.

15583. (Rev. T. Roach, M.A.)—Simplify

$$[(1-e^{i\theta}\cos\theta)/(1-e^{-i\theta}\cos\theta)]^{\frac{1}{2}i}.$$

15584. (James Blaikie, M.A.)—Let O be any point in the plane of a triangle ABC, and let any straight line through O meet BC in P, CA in Q, AB in R; then, if points P′, Q′, R′ be taken on the line, so that $PO = OP'$, $QO = OQ'$, $RO = OR'$, prove that AP′, BQ′, CR′ are concurrent.

15585. (D. Biddle.)—AB, AC are two straight lines of indefinite length; P is a point lying between them, the centre of two circles—the one touching AB, the other touching AC. Draw three straight lines, two tangential to the smaller circle and the third tangential to the larger circle, in such manner that the three intercepts between AB and AC may be equal; and find the locus of P, when the three lines so drawn meet in a point.

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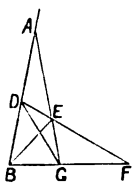
15586. (*Communicated by* FRANK PORTER, M.A.)—ABC is an isosceles triangle, base angles being 80°;

$$\angle EBC = 50°, \quad \angle BCD = 60°;$$

DE is joined and produced to meet the base produced in F. Find the angle EFC by means of propositions in Euclid, Book I. (This problem resembles Question 15474, except that it is capable of solution by elementary geometry.)



OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

8591. (Professor NASH, M.A.)—A bicircular quartic may be defined as the locus of a point P, which moves so that the square of its distance from a fixed point is in a constant ratio to the area of the quadrilateral formed by the tangents from P to a given conic, and the central radii to their points of contact. Prove that in the family of bicircular quartics, having the same fixed point and the same conic, the locus of the centres of inversion is a rectangular hyperbola, and the sixteen foci all lie upon a sextic curve, having two real asymptotes parallel to those of the hyperbola.

8735. (A. GORDON.)—If

$$(x^2/a^2 + y^2/b^2 + z^2/c^2 - 1)\,\theta + (x-\alpha)^2 + (y-\beta)^2 + (z-\gamma)^2 = 0$$

represent a cone, prove that $a^2 + \theta$ is one of the primary axes of the confocals through (α, β, γ).

10815. (A. MARTIN, LL.D.)—From a given point in the circumference of a circle a chord is drawn in a random direction, and then two points are taken on it at random, and a third point anywhere in the surface of the circle: find the chance that the triangle formed by joining these points is acute.

10856. (J. BRILL, M.A.)—If $f(x, y, z, t)$ be a solution of the equation

$$\partial u/\partial t = a^2 \left\{\partial^2 u/\partial x^2 + \partial^2 u/\partial y^2 + \partial^2 u/\partial z^2\right\},$$

prove that $t^{-\frac{3}{2}}\, e^{-(x^2+y^2+z^2)/(4a^2t)} f(x/t,\ y/t,\ z/t,\ -1/t)$ is also a solution.

10962. (Professor SEBASTIAN SIRCOM, M.A.)—Prove (1) that

$$\int_0^{2\pi}\int_0^{2\pi} \sin^{2n}\theta \sin^{2m}\phi \sin^{2n}(\theta+\phi)\, d\theta\, d\phi = \frac{1}{2^2}\,\frac{2n-1}{n}\,\frac{2n+m}{2m+1}\int_0^{2\pi}\int_0^{2\pi} \sin^{2n-2}\theta \sin^{2m+2}\phi \sin^{2n-2}(\theta+\phi)\, d\theta\, d\phi\ ;$$

and (2) evaluate the integral when $m = n$.

11023. (R. TUCKER, M.A.)—If AD, BE, CF be the altitudes of a triangle, (DN, DM'), (EL, EN'), (FM, FL') perpendiculars on (CF, BE), (AD, CF), (BE, AD), and H the orthocentre of ABC: prove that (1) L'N, LN' are parallel and anti-parallel to LH in ΔAHC; similarly for M'L, ML'; N'M, NM'; (2) if (L'M, N'L), (M'N, L'M), (N'L, M'N) cut in α, β, γ, then $\alpha\beta\gamma$ is similar to DEF; and (3) $A\alpha$, $B\beta$, $C\gamma$ meet in the S-point of ABC.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, May 12th, 1904.—Dr. E. W. Hobson, Vice-President, in the Chair.

Mr. G. Birtwhistle was admitted into the Society.

The following papers were communicated:—

"On Perpetuant Syzygies": Messrs. A. Young and P. W. Wood.

"On the Evaluation of certain Definite Integrals by means of Gamma Functions" and "Generalizations of Legendre's Formula $KE' - (K-E)K' = \frac{1}{2}\pi$": Mr. A. L. Dixon.

"Note on the Integration of Linear Differential Equations": Dr. H. F. Baker.

"Some Properties of the Function Γ_p": Rev. F. H. Jackson.

Informal communications were made as follows:—

"The Geometrical Representation of Imaginary Points": Mr. G. B. Mathews.

"A collation of Kessler's and Hertzer's Tables of the Residue Index with Shanks' Table of the *Haupt Exponent*": Lt.-Col. A. Cunningham.

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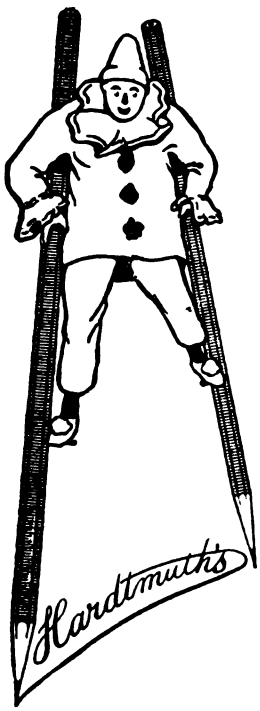

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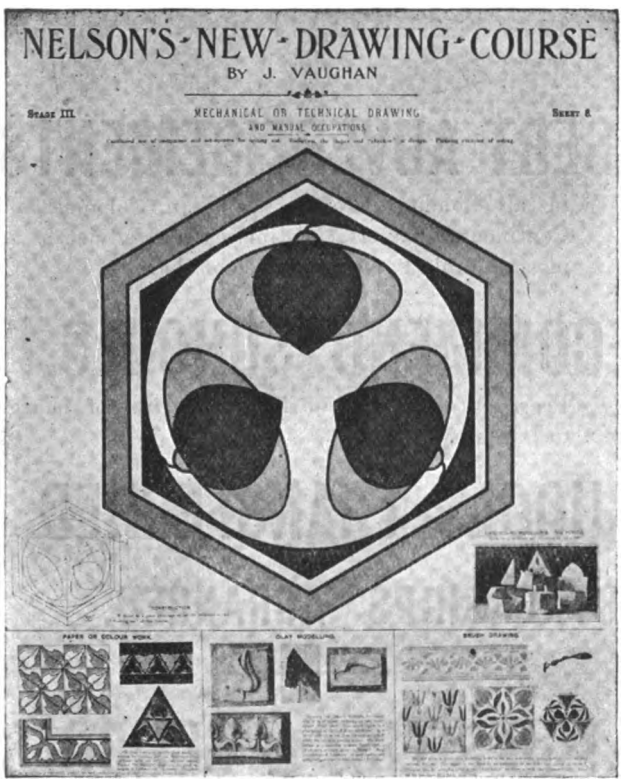

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The Educational Times.

The Proposed Federation of Secondary Teachers.

It will probably be within the knowledge of many of our readers that in the spring of the present year a movement was set on foot for combining in one organization the various existing associations of secondary teachers under such conditions as to provide for common action on educational questions and on matters affecting the profession in general, while leaving them a free hand in their several departments. It appeared to the promoters of the movement that, by its antiquity, by its catholic and non-sectional character, by the lead it has from time to time taken in promoting registration and other measures calling for joint action, and, last and not least, by the resources it had accumulated during many years of efficient management, the College of Preceptors formed the natural nucleus of any such federation. No less was due to the pioneers in the training and certification of teachers, in the system of local examinations, and in the promotion of common professional action. It was therefore resolved to approach the College, and, after considerable discussion, a set of proposals was drawn up by some of the promoters of the movement. These proposals received the approval of a Federation Committee, including representatives of the Head Masters' Conference, the Incorporated Association of Head Masters, the Head Mistresses' Association, the Private Schools' Association, the Preparatory Schools' Association, and the Associations of Assistant Masters and Assistant Mistresses. They were then examined by a Special Committee of the Council of the College, and the report of that Committee, recommending them, as a whole, to the favourable consideration of the Council, was approved at its last meeting. A small Sub-Committee was instructed to meet an equal number of members of the Federation Committee, and to endeavour to come to an agreement as to details and to report to the Council. There the matter at present rests. Should a satisfactory agreement be reached, it will, of course, be necessary to submit it to a General Meeting and to obtain their sanction to petitioning for an amending charter. Meanwhile it is worthy of note that the existing Charter covers all, or nearly all, the possible objects of such a federation as is contemplated.

It is obvious that, from the point of view of the College, no arrangement would be satisfactory that did not, in the first place, provide that any reconstitution should be a development of the existing College, and not its supersession by some different institution, and next that, under all circumstances, including the possible miscarriage or disruption of the proposed federation, its real and personal property should be placed in an unassailable position. The latter requirement it is proposed to meet by the appointment of trustees in whom all property should be vested; the former condition seems to be adequately secured by various details of the proposals. On the other hand, the idea of federation necessarily entails considerable alteration in the mode of election to the Council laid down in the present Charter. It has for many years been the practice of the College to secure the presence on the Council of representatives of as many sections of the profession as possible. Under the proposed conditions direct representation of federated associations is essential, and it seems likely that it can be secured without any serious breach of continuity in the composition of the Council.

It remains only to add a few words on the opportuneness of the scheme. The recent Education Acts have initiated what may be far-reaching changes in the management of secondary education. Whether such changes will be for the public benefit, time alone can show; the general interest roused in educational questions is an undoubted gain. But, at such a crisis, it is incumbent on the profession to formulate its ideas and to make its voice heard on the many problems that have to be solved. To a well organized centre of professional knowledge and professional opinion the more intelligent among those to whom the supervision of education is entrusted would gladly have recourse, nor would they be averse to profiting by professional criticism. They feel that, after all, it is only by making the profession attractive to men of ability, character, and culture that efficiency in education can be secured, and that, without such men, costly buildings and elaborate appliances are useless. Are there not signs that the career of a schoolmaster is less sought after by capable men than it was a few years ago? If so, all the

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more reason for machinery for familiarizing the world with professional needs and aspirations. No doubt there are interests and interests: head masters and assistant masters, public- and private-school masters, do not always view things in exactly the same light; but their points of agreement are far more numerous than their points of difference, and all are alike eager to do the best for the rising generation and to promote the dignity and usefulness of the great profession to which they belong. The present transition period is surely one when their combined influence is most needed, and most likely to be effectual.

For many years the College of Preceptors has opened its doors to many educational associations; it has more than once served as a rallying-point for their conferences with each other. But, just as the action of the Universities in examining first pupils and then teachers necessarily limited the field of usefulness open to the College, so the development of these very associations may in the long run destroy its *raison d'être* and force it into being the organ of but a small section of the profession. It is therefore to be hoped that the steps now being taken to make it a meeting-point for all sections may be brought to a successful issue, and that the College may in the future more effectually than ever fulfil the duty laid upon it by its charter "of promoting sound learning and of advancing the interests of education."

NOTES.

The Board of Education has just issued the year's "Regulations for Secondary Schools," to be operative from August 1, 1904, to July 31, 1905 (Cd. 2128. 2d. Eyre & Spottiswoode). A prefatory memorandum of some length explains that the Regulations "have been framed with the view of promotimg the provision and organization of secondary schools, each of which shall have a clearly defined purpose and a well considered scheme of instruction suiting it to take its proper place in an organized system of National Education." Here is the right note, and the details are worthy of careful consideration. The term "Secondary Education," for the purposes of these Regulations, and particularly for the "administration of grants to secondary schools upon a wider and firmer basis," will be held to include "any day or boarding school which offers to each of its scholars up to and beyond the age of sixteen a general education, physical, mental, and moral, given through a complete graded course of instruction of wider scope and more advanced degree than that given in elementary schools." The Board emphasize and explain the three essential qualities of the required instruction: general, complete, graded. Moreover, "the earlier education leading up to this course, and the further education (if any) given beyond it, are regarded by the Board as forming together with it a single organic and progressive system." Here is a clear effort at welding the system. But there is more to be done yet: Section 20 of the "Conditions of Recognition" provides that "the school must not be conducted for private profit." The Bedfordshire scheme may prove suggestive to the Board of Education. This provides frankly "that, where possible, the Local Education Authority should *make or refuse grants to schools which are conducted for private profit in the same way and on the same conditions as such grants are made or refused to schools conducted on a purely public basis*"—a notable example of good sense and public spirit.

The University of Manchester has honoured itself in doing honour to the memory of Prof. Adamson. A bronze medallion portrait of the late Professor was unveiled in the Christie Library (June 3)—a replica of that in the University of Glasgow; accompanying the medallion was a gift of £300, the surplus subscriptions, for the foundation of an Adamson Lectureship in philosophy, literature, or science; and there was also a gift of Adamson's philosophical library, which triples the former extent of the philosophical library of the University. Before going to Aberdeen and Glasgow, Adamson had laboured for seventeen years at Owens: he practically drafted the plan of studies there, and worked with his usual untiring energy as Registrar, as first Secretary to the Board of Studies, and then as Chairman of the Board. He was undoubtedly, as Prof. Sorley said, the man of greatest philosophical learning of his own age and country: only his friend Croom Robertson could have come into competition with him on that ground. How thoroughly he had lived through the great systems of philosophy, ancient and modern, can readily be seen in the two volumes of his lectures recently edited by Prof. Sorley (Blackwoods). But his subtleness of intellect and comprehensiveness of speculative power would not have led him to his conclusions if he had followed the too common philosophic practice of sealing himself up hermetically in a glass jar, or retiring from the world like a Sanyasi. Adamson was a keen man of affairs as well as an earnest student, and all the more effective a philosopher for his familiarity with the practical life of the world about him. He was a greater man than Manchester even yet knows: his modesty still veils his qualities. These memorials of him in the place of his first public work will grow in value with the years and stimulate and elevate the coming generations of students.

In "An Oxford Correspondence of 1903," which he professes to "edit" (2s. 6d. net. Blackwell (Oxford); Simpkin, Marshall, & Co.), Mr. W. Warde Fowler plays deftly, and by no means ineffectively, around the outworks and substructions of the Modern *v.* Classical Question at Oxford. From the correspondence, which passes between an Oxford tutor and a "second-class" pupil that has failed to get into the Indian Civil Service list, it appears that there is a good deal to be said on both sides as to the scheme of Greats, though the experience of a new interest without an examination at the end of it and the example of work at Zürich University and Polytechnikum give impressive weight to other views of working methods. We quite agree that "it won't do to run a tilt" at examinations; but, if "the remedy for their present exacerbation is to be found in a wholesomer educational atmosphere," we wish the accomplished tutor had shown how such atmosphere is to be induced. True, the wise physician "will study the whole constitution and try to attack the mischief at its roots"; only is it not about time that he was getting at those roots? But in any case the *brochure* makes very charming reading, and combatants

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of every colour will vote it delightful—even, we venture to speculate, that terrible "man of science who lectured a day or two ago here on Oxford and Physical Science." Yet, after all, why not grasp the nettle, and get forward with the business?

"To change the system, to do away with compulsory Greek from Responsions, means to disorganize the education of almost all the schools of the country." "Take away the great basis of educated thought, the slight but widespread acquaintance with the greatest of languages and literature, and the whole basis of modern life is transformed." Such is the burden of "The Study of Greek" (6d., Parker)—a militant pamphlet by the Rev. Dr. I. Gregory Smith, with recommendatory preface by the Master of Pembroke (Oxford). No doubt there are minds that will respond to this sort of appeal, but we rather fancy that a strict regard to the point at issue and a careful estimate of the facts involved would be more serviceable to the cause. Greek is in no danger whatever; whether a certain number of youths would derive more advantage from transferring their time and energy from a rather futile struggle with Greek to some other subject or subjects is a very different matter, and really a somewhat smaller matter.

THE bitter cry of the Irish Protestant National Teachers' Union on the question of tenure was heard at Belfast on June 18. It is but recently that all Irish elementary teachers were in the same boat of absolute insecurity; but the Catholic hierarchy had the good feeling and the good sense to resolve that no clerical manager should dismiss a teacher without the sanction of the Bishop of the diocese, and now the Protestants have to fight their own battle. The *Irish School Weekly* (June 11) quotes Dr. Starkie, the Resident Commissioner:

> The present system of school management in Ireland is such as no other country can parallel, and only historical reasons can justify or palliate. The local managers have absolute power of appointment and of dismissal of teachers, although they are not responsible for any portion of the salaries, and are merely the channels through which the State grants pass.

Our contemporary also quotes from a speech of the Chief Secretary (April 18):

> In Ireland the teacher is in the same anomalous position. He is practically under the Board so far as prospects in his profession are concerned. His appointment and dismissal are exclusively in the hands of the management. What general result of education can you expect when the teacher is absolutely at the mercy of the managers of some twopenny-halfpenny schools? He can only be appointed by one man and dismissed by that man any day of the week.

This renders intelligible the phraseology of a Tipperary rector, who advertised (February, 1901) in a Dublin daily for "a Classed and Trained Principal Teacher under the National Board, able to conduct the playing and singing in the Parish Church, thoroughly conscientious and disciplined, strictly obedient in all details to the Manager, and humble and respectful to all." Really it seems a strange phenomenon that, in a society where such things are possible, there should have been found spirit enough to start a Union. The position of these teachers is humiliating and discreditable in the last degree, and disastrous to the interests of education.

SIR COURTENAY ILBERT'S Romanes Lecture should have the effect of drawing some attention to Montesquieu, who, though 'no longer the oracle of statesmen," is a most charming, writer, and still possesses a large literary and historical interest. It could scarcely be otherwise if he "was during the first half of the nineteenth century the inspiration of all constitutional monarchists both in France and in other European countries." The transformations operated by physical science have issued in a new world, no doubt; but the historical importance of Montesquieu's ideas still remains. Sir Courtenay thus summed up:

> Montesquieu left two great legacies to the world. He formulated the theory of the British Constitution, which held the field for a century, and was the foundation of every constitutional Government established during that period. He gave a new direction to the study of legal and political sciences. Montesquieu was one of the greatest of the apostles of liberty in modern times. Socially and politically he belonged to the old *régime* which in France passed away in 1789, which in England, where changes were less catastrophic, began to pass away in 1832. Scientifically, also, he belonged to a bygone age. His new ideas, his new methods, once so fresh, so attractive, so stimulating, had passed into and been merged in the common heritage of Western thought. But in his generation he succeeded with a success beyond his most sanguine hopes in doing what he tried to do—he made men think.

ANOTHER proposition for the furtherance of "Imperial Education"—this time from Canada. Spite of tariffs and tiffs, we all love Canada, and many of our people go out "to share in the development of the unrivalled wealth of the Dominion's resources." But it is only the man with an art in his muscles or at his finger-ends that can at once take off his coat and go to work—the farm-labourer, the artisan, the mechanic. In business it is different: business men do not arrive ready-made; and "the Canadian man of business is not going to engage a man of thirty, or even four or five and twenty, with no business training, when he can get boys of seventeen or eighteen who will go in at the very beginning and learn the very alphabet of his methods." We cannot complain: it is very much our own principle. But Mr. J. F. Crowdy, classical master in the Upper Canada College, Toronto, and an old Harrow and Trinity man, proposes to meet the difficulty in this way (*College Times*):

> A boy could be educated in England till he was fourteen, at one of the preparatory schools, where he can get the best of grounding; then come out to Canada, enter some good school here, and spend three or four years in it. With such a beginning he would go far in scholarship, and would lay the foundation of friendships that would be useful in his business career. . . . It would give to Englishmen at home a knowledge of Canada, an insight into Canadian thoughts and feelings, which at present they do not possess, and who can say that much benefit to both countries might not result?

Boys cannot very well be sent everywhere; but, if Canada be chosen as their future field of business operations, the proposition does not seem amiss.

IT runs against the grain to apologize for bad spelling, but after all very much depends upon the circumstances. We do not inquire now whether spelling comes, when it comes in proper form, by nature or otherwise. But, surely, when it stands in competition with practical qualities there should be no question which is to be preferred. It is reported that Lord Roberts has refused to appoint some officers on the Staff because they spell badly. If he has plenty of competent officers to choose among, then that may give some weight to his exclusion of such as are weak in spelling, though perhaps not much weight. An officer writes:

> Although a bad speller, I was almost invariably selected to make

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surveys in my regiment. I was also first in fortification at one examination at Sandhurst, and made 49 out of 50 possible at the digging class, Chatham. On one occasion, on mentioning this defect (bad spelling) to a general officer who had been Commandant at the Staff College, he remarked that he had two sons—one in the Engineers, a very clever man, but who, nevertheless, could not spell correctly; and the other in a Line regiment, but not clever, who never made a mistake in spelling. Now, which would you rather have as a Staff officer of these two?

Yes, but that is not quite the point; the case assumes that there is no adequate choice among officers that can spell. But why a man should be thrown back in so utterly practical a profession on the ground of his spelling is difficult for an outsider to understand. Were the Boer officers examined in spelling before appointment? On the other hand, why on earth should a man not be able to spell decently? The puzzle seems hopeless, though one might have fancied that a very little attention would soon settle the matter.

SUMMARY OF THE MONTH.

Floreat Etona! The Fourth of June was a fine day and a brilliant day at Eton. Among the famous visitors were Earl Roberts, Lord Curzon, Mr. Brodrick, and Mr. Wyndham; and Lord Curzon, in professing his indebtedness to Eton, went very near to adapting to his own career in India the Wellingtonian legend about the virtue of the playing-fields. The wet bobs, the procession of boats, the speeches of the Upper School—we quote the descriptive formula from a respected contemporary—"all went off with a swing."

THE Greek Play at Bradfield College—this year the "Alcestis" of Euripides—was acted by the boys with great applause. Some fifteen hundred persons accepted invitations for one or other of the five days of the play, and the weather was propitious. The dresses and other appointments were archæologically correct; and the lion's skin worn by Hercules (H. A. Robinson) was lent by Mr. F. C. Selous, to whom it was presented by the late King Lobengula. The music was written by the Rev. S. J. Rowton, M.A., Mus.Doc., Director of Music at the College. Dr. Gray was deservedly complimented in the highest terms, and the labours of all those engaged in the representation were greatly appreciated.

AT the National Society's annual conference of diocesan secretaries and inspectors, principals of training colleges, and others interested in Church schools (June 10), the Bishop of Gloucester in the chair, the Rev. Prebendary Hobson, Principal of St. Katherine's Training College, Tottenham, speaking on "The Supply and Training of Teachers," said it had been calculated that in London alone, to bring the Church schools to the level of the old Board schools in respect of staff, two thousand certified teachers were needed. At the present time there was a deficiency of five hundred certified teachers in the London Board schools, and in the whole country there was need of from fifteen to twenty thousand certified teachers either now or in the very near future. Canon Hankey, referring to the pupil-teacher system, said that a system by which children of between fourteen and sixteen years of age were taught to be young prigs by being placed in charge of other children was utterly vicious and wrong. The Rev. Donald Jones, Principal of Bede College, Durham, dealing with "the syllabus of the religious knowledge examinations in Church training colleges," remarked that it was an impossible syllabus.

AT an adjourned Conference between the representatives of the County Councils and County Borough Councils of Lancashire and Cheshire with reference to the provision of training colleges for teachers, held at Manchester (June 9), the following resolutions were passed (after considerable debate on the second):—

(1) That, in the opinion of this Conference, the number of trained teachers employed by the various Elementary Education Authorities should be largely increased. (2) That, in the opinion of this Conference, it is desirable that the various Educational Authorities in the whole of Lancashire and Cheshire should co-operate in the training of teachers and in the provision of training colleges, and that a sub-committee be appointed to draw up a scheme for consideration, carrying out the foregoing proposal.

After further discussion, it was decided that the committee should consist of two representatives of each of the County Boroughs, three representatives each of the Universities of Manchester and Liverpool, together with the chairman and deputy-chairman and the chairman of the Elementary Sub-Committee of the Lancashire and Cheshire County Education Committees, and the principals of the training colleges at Warrington, Edge Hill, and Cheshire.

THE Annual Conference of the Association of Head Mistresses was held at the Mary Datchelor School for Girls, Camberwell (June 11), Mrs. Bryant, D.Sc., President, in the chair, and 165 members in attendance. The Presidential Address dealt with the correlation of the school stages of education. Far above the cultivated intellect and the carefully formed habit of will was the importance of turning all powers to purpose, and the beginning of sound education consisted in the development of the child's interest in all sorts of humanly interesting things. The following resolutions were discussed and carried unanimously:—

That, in view of the forthcoming issue of supplemental registers, the Association desires that evidence of a good general education be required in addition to the qualification in the special subject.

That the Association welcomes the proposal to constitute a College of Secondary Teachers, and desires to co-operate with other recognized associations in carrying it into effect. The most important objects of such a college were represented to be: (1) to promote sound learning and in particular to advance secondary education; (2) to form a corporate body of teachers as fully representative as possible of the various branches of secondary education; (3) to press upon Central and Local Authorities the importance of freedom and diversity in education, so that they may recognize and aid various types of secondary schools, whether public or private; (4) to advocate the claims of efficient private schools for such recognition and aid, on grounds both of equity and of the economy of public money.

Various papers were also read and discussed. A desire was expressed by the Conference that information on the subject of co-education should be collected and circulated.

THE International Women's Congress at Berlin has paid considerable attention to education. Fräulein Schneider spoke strongly in favour of co-education. She was warmly supported by Frau Losper Housselle, who also urged that the social duties of women as teachers concern the children, girls who had left school, mothers generally, and, lastly, their own development. At Brandenburg a society had recently been formed for the purpose of educating children by special theatrical performances, concerts, and appropriate books. For girls who had left school the same society had, continued Frau Losper Housselle, a room for culinary classes and general instruction in practical work in the house, &c., while mothers were given elementary medical instruction in the care of children, &c. Lady Marjorie Gordon gave an account of the splendid schools in Scotland, and also of the beneficial influence exercised by women in educational matters there. She hoped that German women would also soon acquire the right to take an active part in all educational matters. Fräulein Blum demanded more practical instruction on sanitary matters, and on the great evils of alcohol and intemperance. She thought continuation schools of the highest importance for young girls. Frau Dr. Friburg (Finland) pleaded eloquently for co-education.

FROM a return presented to the House of Commons showing the total amount of the residue grant paid to Scotch Local Authorities, and the manner in which it has been allocated during the year ending May, 1903, it appears that the total amount of the residue grant paid to the County Councils and Town Councils of burghs and police burghs in respect of the year 1901–1902 was £69,491. 4s. 10d., of which £50,686. 10s. 4d. was allowed for purposes of technical education, and £17,304. 14s. 6d. was devoted to relief of rates, while in the case of one burgh the allocation of a sum of £1,500 remained in abeyance. The total amount available for purposes of technical education during the year 1902–1903 was £70,877. 19s. 9d., and the total amount expended was £55,685. 5s. 8d., of which £12,164. 13s. 9d. was handed over to the Secondary Education Committees.

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THE Report of the Committee of Council on Education in Scotland says:—

Turning to the whole existing supply of teachers, we find that of 4,454 male teachers 81·01 per cent. had been students in training colleges or King's students, while of 7,626 female teachers 61·58 per cent. had received a similar training. It must not be forgotten, however, that of the minority, especially in the case of the male teachers, many have obtained, otherwise than in the training colleges, a training of a very valuable sort. Many of both sexes, who enter the examination as acting teachers, have acquired a knowledge of the duties of their profession, by serving as pupil-teachers, and afterwards as assistants, under teachers of large experience and skill. Of the whole number of teachers, again, we find that 1,247 are graduates (1,116 male and 81 female), while many have been partially educated at the Universities, and have also acquired experience by service in schools. . . . The training colleges, however, continue to constitute the chief source of the teaching supply, and we found it expedient in 1898 and 1900 considerably to increase the number of recognized students. These colleges, which are eight in number, are now recognized for 1,392 students. . . . We estimate very highly the plan of adding some attendance at University classes to the ordinary curriculum of the training colleges. This plan was first proposed by the Code of 1873, under which the fees of students, who, after giving proof of their qualifications, attended University classes, were admitted as part of the legitimate expenditure of training colleges. Advantage has been taken of the opportunity to a large extent. Statistics show that not a few of the future Scottish teachers are acquiring some higher culture in a sphere larger than that of any institution devoted to purely professional training, and we believe that this will greatly help in maintaining the high standard which has always been a traditional characteristic of Scottish education.

Seeing that the training colleges are the source from which most of our teachers are drawn, it is interesting to inquire whence the candidates for admission to the training colleges chiefly come. Last year there were 4,165 pupil-teachers of all years, 1,071 of whom were in the last year of their engagement. In December, 1903, 852 pupil-teachers and ex-pupil-teachers were presented at the examination for admission to the training colleges, of which number 445 passed the examination in the first or second class. There were also presented 167 candidates who had not been pupil-teachers, of whom 58 qualified for admission. In addition, 519 candidates (399 pupil-teachers and 120 non-pupil-teachers), having passed the qualifying examinations mentioned in Articles 70 (*d*) 6 (*a*), 70 (*d*) 6 (*b*), 95 (*a*) 2, 95 (*a*) 3, 96 (*a*), and 96 (*b*) of the Code, were eligible for admission without further examination. It appears that it is the pupil-teacher class from which the great majority of our students come, and the training and qualifications of the pupil-teachers must thus exercise a determining influence upon the future teachers who come from training colleges.

THE fifty-seventh annual report of the Friends' First-day School Association shows that the year has been one of great progress, thirty-nine adult schools having been added to the list, with nearly 6,000 adult members; besides an increase of nearly 700 in the members of children's schools. In the three years the number of adult scholars has increased from 29,000 to 40,000, and of children from 17,000 to 22,000. The schools are grouped according to the quarterly meetings within whose limits they lie; and an exhaustive list, with details of numbers of members, and clubs, and so on, is printed with the report.

PROF. REIN, of Jena, speaking at Manchester (June 15) on the use of a practising school, said:—

A hundred years ago Kant said: "First we must have practising schools and then we can have normal schools. That is to say, we must have schools in which we may seek new methods and try new theories." Kant's words were spoken to dull ears, but lately their importance was understood. Men were found in Germany who made Kant's words a reality, and through them the reforms had progressed. From those schools established at the different Universities thorough teachers, men and women, had gone forth—thorough because in their training theory was combined with practice. They would laugh at any man who put outside his house a notice: "Here swimming can be taught, but there is no water." That was what some of the Universities had done in the past. The importance of a practising school was two-fold. In the first place the practiser of education himself needed a practising school, so that his theories should not be unworkable. Secondly, the practising school was necessary for the training student. Without a school he (Dr. Rein) would not like to be a professor of education. He would say that he could not undertake the training of teachers, for it was in the school that they must encounter the difficulties of the subject. Natural aptitude differed in different beings, and depended upon the enthusiasm and the love of the teacher. The methods of training teachers which had been undertaken at Jena had been proved, and their importance had been recognized by the Government. When his predecessor, Herbart, died, the Government determined to maintain both the Professorship of Education and the practising schools, because they had gained experience that thorough teachers were trained in those institutions. In Jena they had first the *Theoreticum*, one day in the week, when the student must present some piece of independent work, to show that he had acquired the requisite knowledge; secondly, they had the *Practicum*, also held every week, and each member of the *Seminar* must show that he had sufficient practical knowledge of teaching; and, thirdly, they had the *Criticum*, in which the experimental lesson was discussed and criticized. It was not wished that the students should only retain what they had learned, but the object was to develop their independence of thought.

IN the course of a lecture at Owens College (June 15) on "Educational Ideals," Prof. Rein remarked:—

The aim of education [he said] was to make life worth living, to achieve some absolute standard of moral worth. He referred to the ideals of ecclesiastical culture, to the ideals of the State, and to the practical ideals of civilization. Ideals must not be delayed until a nation had found the wealth to indulge in them. The German people had been largely influenced by Greek ideals, which were not wholly in harmony with modern democratic conditions, and had been modified in popular opinion, and now by the State in the ideals of the industrial and scientific world. But science, whilst it had discovered much, had revealed some secrets beyond its gaze. Art had also offered its ideals, but æsthetics could not be severed from morals, a fact exemplified by the fate of Greek culture. In Germany to-day the neglect of art in earlier times had led to excessive devotion to art at the expense of the highest and noblest ideals. This highest and noblest lay in the moral life—here and not elsewhere—and was the test both for the individual and for the nation. The individual alone could only be an egotist; society could make him a moral being, for the common life demanded self-sacrifice, and from self-sacrifice sprang the highest type of life, creating a system of moral law which in all ages had controlled the moral life. No development of moral culture could set aside the Ten Commandments. The Christian State was only Christian when it cared for the whole society, and this was the merit of the social order in Germany: it cared for the whole in the interest of the individual. The old morality based on the needs of the common social life must always be supreme in spite of all attacks from schools of philosophy. He appealed to the audience, and especially to teachers, to ponder well upon the deeper tendencies of the age in the region of ethics, and to resolve whether Kant was right in prescribing the laws of the moral life as permanent elements in human existence.

A MEETING of the governors of the Trust for Education in the Highlands and Islands of Scotland was held (June 7) in Edinburgh, Sir William Turner presiding. The Education Committee recommended that a clause should be inserted in the Education Bill for Scotland providing bilingual teachers for schools in districts where Gaelic was the spoken language of the people. Principal Salmond did not think this was a matter for the Bill; it was really a question of administration, and the Secretary for Scotland should deal with the matter either in the Code or by special Act of the Education Department in the way of making a grant out of the Education (Scotland) Fund. The Rev. Dr. M'Phail said he had never felt any special concern about the language, but about the people whose misfortune it was that they did not know English. A resolution expressing the hope that measures would be taken without delay by the Scottish Education Department to provide a sufficient supply of Gaelic-speaking teachers in the Highlands was adopted. A committee was appointed to prepare a memorandum on the subject to the Secretary for Scotland.

MR. ALFRED WEBB writes in the *British Friend* (June) on the origin of the name "America":—

A group of scholars was brought together during the first decade of the sixteenth century in the little town of St. Dié in the Vosges, between Strassburg and Nancy. One of these was Martin Waldseemüller, who devoted himself specially to geographical studies and the preparation of maps. A text-book explaining the meaning of geographical terms and the symbolism of cartography was issued from the private press of the St. Dié Academy in 1507. Humboldt was the first to draw attention to this book and to the suggestion therein contained, which was destined so profoundly to effect nomenclature:—"Alia quarta pars mundi] per Americum Vesputium . . . inventa est, quam non video cur quis jure vetet ab Americo inventore, sagacis ingenii viro, Amerigen quasi Americi terram sive Americam dicendam; cum et Europa et Asia a mulieribus sua sortita sint nomina." Martin Waldseemüller was therefore, without doubt, the namer of America. The maps, which this text-book was meant to illustrate, have only lately been discovered by a Father Joseph Fischer, in search for

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material for studying the early geographical history of Northern Europe, in the ancient castle of Wolfegg in Wurtemberg, and they have lately been published in a folio of 55 pages and 27 plates by Henry Stevens, Son, & Stiles, of London.

UNIVERSITIES.

(From our own Correspondent.)

Oxford.

THOUGH the term has not been particularly fine and the weather never particularly warm, we can certainly congratulate ourselves that we have fared respectably: we have not had, as in 1903, deluges of rain and inundated cricket grounds. With a single exception—the non-first-class fixture against the Authentics—the cricket matches have been played out. We had fair weather for the Eights, and we were spared oppressive heat in the "Schools" week; and, lastly, the holiday makers have had a very fine Commemoration. Consequently we have not had much cause for grumbling. In University business there has not been much of first-class interest, though the echoes of the thunder of the "clerical" debate have died away slowly.

A two or three days' excitement was raised by the notice issued by the examiners in the schools that candidates must wear *black* coats and white shirts. We believe that the examiners had consulted the Vice-Chancellor, and been assured that some reform in the rather lax method of undergraduate costume in the schools was desirable. At any rate, the *ukase* was issued without consultation with the proctors. It at once stirred up a storm of protest: it was denounced as *ultra vires*. The *subfusca vestis* of the Statutes was cited. A writer in the *Oxford Magazine* suggested that candidates should also bring, as permitted by the Statutes, "for purposes of innocent recreation," bows and arrows.

Whatever the rights and wrongs in the matter of costume, there seems no doubt that the examiners in the schools have only proctorial authority in the absence of the proctors; therefore, it would have been advisable to take the proctors into council, as in their presence at the schools the substituted authority of the examiners would disappear. The candidates themselves had not apparently studied the legal intricacies of the question, and therefore obeyed to a great extent the edict: consequently, we were edified by frock coats and evening suits. However, when the men arrived at the schools they found the proctors there in possession. Apparently the proctors had also consulted the Vice-Chancellor, and found that he disagreed with the terms of the edict. The eventual result was that the new requirements were not enforced, and the examiners found themselves checkmated. One cannot but sympathize with them in their efforts to make the undergraduates more orderly in their costume on official occasions, but such sweeping reforms as they attempted were not well advised.

We have had one University appointment of interest—that of Dr. Firth to succeed Prof. York Powell as Regius Professor of History. The appointment was in accordance with expectation, and was foreshadowed in these notes a month ago. We shall have to wait till next term to see what line the new Professor will take: he is, of course, in some or most respects an antithesis to Prof. York Powell.

Over another inside appointment we have had a little excitement: Dr. Payne has been the University representative on the General Medical Council for some time and was renominated again by the Hebdomadal Council: but, as a matter of fact, the actual election lies with the members of Convocation, and it appears that with the resident medical members of the University Dr. Payne's views on some subjects do not find favour. So Prof. Arthur Thomson was nominated in opposition to Dr. Payne. There was a question whether the latter would withdraw when he found that there was so much opposition: as a matter of fact, some correspondence between him and his nominator, Dr. Magrath, was circulated among members of Convocation, and Dr. Payne in his answer to Dr. Magrath expressed a willingness to withdraw if his nominator thought fit. However, he did not withdraw, but he was very easily defeated. Prof. Thomson is one of the best organizers up here and has done a very great deal in carrying through reforms at the Museum: he is unfortunate, perhaps, in not having any college backing, as like most of our Science Professors he is not in the accepted sense an Oxford man.

Commemoration has been a distinct success, and the function of the Encænia, though prolonged beyond the natural limits of endurance, was well organized. We had been led to expect that the new Chancellor would not be audible, but we were agreeably disappointed: after a certain pardonable hesitation at first, he warmed to his work—no slight matter when the number of honorary degrees (*i.e.*, 37), to be submitted separately, is taken into account—and as a frivolous graduate in the arena calculated with a stop watch he reduced his time for the submission of the name of a Doctor from 25 seconds to 9¼ seconds. Even then the proceedings lasted over three hours, and the unfortunate Doctors of Letters who came last had a weary wait in an adjoining hall. Dr. Goudy, in presenting the Doctors of Civil Law, was quite adequately ample; while in the cases of Science and Letters Dr. Love and Mr. Bywater were somewhat inaudible. A critic, after listening to Dr. Love, was of opinion that, in the interests of science, Latin should be abolished as well as Greek.

It would take too long to say anything about the recipients of the degrees. The French Ambassador, Lord Curzon, the Speaker, Sir John French, Signor Marconi, Mr. Howells, and Mr. Andrew Lang had perhaps the warmest receptions. Signor Marconi's youth came somewhat as a surprise. The Chancellor's addresses to each new Doctor were models of brevity, and the epithets very happily chosen. Of the rest of the proceedings it may be said that Dr. Merry, in his brilliant Creweian Oration, once more made Latin intelligible; while the Newdigate Poem, by its length and monotonous delivery, roused considerable impatience. Otherwise the behaviour of the undergraduates had been exemplary—almost too exemplary if traditions of Encænia wit are to be preserved—while the numerous ladies endured bravely to the end, munched chocolate, and did not faint. There was the usual official lunch afterwards at All Souls, and in the evening many of the new Doctors were guests at the Christ Church Gaudy.

(From our own Correspondent.)

Cambridge.

THE office of Vice-Chancellor for the coming year will be filled by Mr. E. A. Beck, the Master of Trinity Hall, and the University could not have a more popular or dignified representative. The Hall has for generations been noted for the devotion of masters and men alike to the college ideal. Men like Ben Latham and Mr. Beck may be survivals of older days, but they were good old days, when the interests of the college came first and the individual a bad last.

Mr. Roberts, Master of Caius, is the next on the list for the Vice-Chancellorship. People say he has made mistakes—he certainly has made Caius—in two years' time he will be able to spare some time from the government of his college to devote his energies to the task of University management.

The Department of Engineering has always been conducted on up-to-date principles; it has now resolved on a new departure. By the Coal Mines Regulation Acts of 1887 and 1903 certain qualifications are required from managers in coal mines; five years' practical experience has hitherto been required, but a course of two years at the University is now recognized as equivalent to two years of such practical training. A Syndicate has reported that the necessary subjects fall well within the limits of the curriculum of our Engineering School with the exception of the principles of mining, for which a special teacher will be required. Practical work in coal mines is to be required from all candidates, and this is to be obtained during portions of two Long Vacations under qualified mining engineers. The scheme seems thoroughly workable, and for University men will not entail the creation of any fresh examination except in the principles of mining. As we have a Department of Mineralogy, the subjects of metallurgy and assaying can also be taught for those whose work will be in metalliferous mines.

A novel idea has recently been started that the whole of the educational staff of the University should be remodelled on University, as opposed to college, lines. For the Honour work this has practically been done, but the extension of the idea to the colleges is suggested. The scheme does not seem to take into account one or two factors of Cambridge life: the ordinary Fellow of a college is tempted to stay in Cambridge by the comfortable addition to his means afforded by a lectureship. No one pretends that considerations of merit affect the appointments; poll lectures are a form of college discipline and give the college staff an opportunity of knowing some of their men by sight; the payment of fixed salaries to University teachers would certainly lead to perfunctory work; and the adjustment, which is now so easily arranged when a hitch occurs in college arrangements, would be very difficult in the case of University officers. At present the poll coach, harmless but necessary, fills a gap, and, if compulsorily abolished, he would spring up again

rejuvenescent in another form. In reading between the lines the real meaning of the reformers' manifesto can be detected; there is a growing feeling against the tuition charge, averaging £24 a year, which every man has to pay in addition to the £27 a year which he finds it expedient to pay to his coach for the purpose of getting taught.

One illustration may make the position clear. At a small college a man may be in for a subject in which no lectures are provided: he will attend two sets of lectures given under the auspices of a special Board by one of the recognized lecturers; the two guineas will be paid out by the college, and the balance of the college tuition fee—£5. 18s.—seems to the average man to be paid for nothing. Reforms will come some day, possibly in the form of the creation of a special Board of Studies for the full degree, with "recognized" lecturers as in the case of the other special Boards. By this means the more efficient public lecturers would obtain the patronage of those colleges which did not care to provide teaching for poll men. This, with the important addition of supervisors of studies in each college to advise the men as to their reading and to test their progress, would, at any rate, be an improvement on the present plan.

The Board of Military Studies has made preparations for the influx of work which will be entailed by the new regulations for University candidates for the Army. Lieut.-Colonel H. Dyke has been recognized as an instructor in military subjects, such recognition being a well deserved acknowledgment for conscientious and devoted work as a pioneer of military education in Cambridge.

A propos of the soldiering department, May Week this year was enlivened by a novelty in the shape of a gymkhana, arranged by the University Rifle Volunteers, under the management of a committee consisting of Colonel Edwards, Major Comter, and other officers. The sports afforded a delightful afternoon's amusement for a fairly large crowd of May Week sight-seers. On the river there was much excitement. Third Trinity remained head; but the surprise of the week was the deposition of Trinity Hall by First Trinity, who had lost the services of more than half their crew by an unfortunate outbreak of chicken pox.

The college balls were more numerous, and, if possible, more successful, than ever. The Hawks' Club followed up their new departure of last year by giving their ball during the Eights Week. It was one of the most enjoyable functions of all. The Masons', Trinity, and Trinity Hall balls were the largest of the dances; but there was much amusement to be had at the smaller gatherings in the more homely surroundings of the various colleges.

Cambridge is now empty for a while, and the gyps are masters of the situation.

London. It has been resolved:—(1) That recognition for a limited period be granted to teachers in cases where such recognition may seem desirable, and that such recognition be termed "probationary recognition." (2) That probationary recognition be not given in the first instance to any person over twenty-eight years of age. (3) That probationary recognition be, in the first instance, for a period of two years only; and that, at the end of this period, a fresh application be submitted if further recognition is desired in each case. (4) That probationary recognition be extended at the discretion of the Senate, in cases where such extension may seem desirable, for a further period of two years—but not beyond that period. Probationary recognition will carry with it, so long as it is in force, all the privileges of full recognition.

Manchester. Elsewhere (Notes) we refer to the memorial of the late Prof. Adamson. On the occasion of the unveiling of it, Prof. Sorley said:

Prof. Adamson was indifferent to the acts by which reputation was gained; but he was never forgetful of the end he set before him. He never lost sight of the ideal of knowledge which had filled his mind, and in early life he dedicated "his age as well as his youth, the later growth as well as the first fruits, at the altar of truth." Single-mindedness marked his whole philosophical work, whether in writing or teaching, or in that more intimate reflection of which both writing and teaching were the expression. Two strains not often found together met in him and produced the independent thinker. There was the scholar's strain. Without doubt, he was the man of the greatest philosophical learning of his own age and country. The long series of efforts after truth, which formed the systems of philosophy, ancient and modern, were lived through by him as part of his own intellectual striving. He had felt and faced the difficulties of philosophy as they presented themselves to every different type of mind, and had himself taken each step by which the world problem worked out its slow solution. With the strain of the scholar and historian there was united another strain—that of the man of science. In his mind there never was any opposition, such as was sometimes spoken of, between science and philosophy. The precision of method, the loyalty to fact, the strictness of reasoning which belonged, or ought to belong, to the man of science was his everyday attitude. But, more than this, he had a constant regard in his thinking to the conceptions and laws put forward by the special sciences. He saw in them the material in connexion with which philosophy must attempt its complete comprehension of the world of Nature and mind. Subtle intellect and comprehensive speculative power were united in him with a character of singular sweetness and charm. He did not live to see an independent University in Manchester, although he had no small share in the preliminary work which made the consummation possible. Beloved as colleague and teacher and trusted adviser, in academic affairs a practical administrator, sympathetic with the spirit of modern science, full of the result of intelligent learning, he was yet the representative of the most abstruse of studies, and followed them by the severest method.

Birmingham. A University scheme for the training of secondary teachers for the Secondary Teachers' Diploma has been drawn up by a committee consisting very largely of head masters and head mistresses of secondary schools. Subject to exceptions in favour of those actually engaged in teaching at present, a diploma will be granted only to candidates who have had a whole year's training as provided for by the scheme. Candidates for the diploma must have been admitted to a degree in the University of Birmingham or in some other University of the United Kingdom, or they must have obtained such other qualifications as shall be approved by the Senate. The course for candidates will extend over one academic year, and consist of regular attendance in an approved secondary school and at the prescribed courses of lectures at the University. It will be the business of the head master or head mistress of the school to make the candidate as thoroughly acquainted as possible with school methods, arrangements, and curriculum, and a satisfactory report from the head teacher will be necessary before the candidate can be admitted to the diploma examination. In addition to the courses set out in the regulations Sir Oliver Lodge will deliver a short course of lectures on teaching methods. In response to a first circular sent out by Prof. Hughes, the head masters and head mistresses of most of the important schools in the Midland District have expressed their willingness to accept candidates in their schools under the conditions set out in the regulations, and these schools have been approved by the University for the purposes of the scheme.

Edinburgh. The Senatus of the University of Edinburgh have sent a memorial to the House of Commons on the subject of the Education Bill. They express their general approval of the principles of the measure, and say that if it becomes law it will greatly conduce to the efficiency of national education in Scotland. They approve the establishment of Provincial Councils for education in Scotland, on which the four Universities are to be represented. The petitioners especially refer to Clause 52 of the Bill, in which it is provided that a specified majority of the governing body of any educational endowment may, with the consent of the Department, transfer such endowment and any school in connexion therewith to the School Board of the education district in which the school is situated, and the School Board, if they think fit, may accept the transfer, become the governing body, and administer the endowment. "At the present time," they go on to say, "the Universities are empowered by certain deeds and Provisional Orders to elect representatives on the governing bodies of various educational endowments, and to exercise thereby important administrative duties, especially in relation to the educational interests of these institutions. The Universities are not, however, represented on the School Boards, and the transference would sever the connexion between the Universities and the institutions in question. Whilst there are cases in which the powers conferred by this clause would be of service, your petitioners are of opinion that there are institutions in respect of which it is desirable to retain the administrative connexion with the Universities, and, therefore, that the exercise of the power of transference should be subject to some limitations. In particular, your petitioners would suggest that in the case of the Heriot Trust, in which the

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University of Edinburgh is more immediately interested, a transference should not take place without separate legislation."

Glasgow. The University Court has decided to invite the University Courts of the other Scottish Universities to send representatives to a Conference which shall consider in their full extent the questions both of the three-term session and of the reconstruction of the curriculum in Arts.

The Court has confirmed the decision of the Senate against a general opening of the medical classes to women in co-education, leaving proposed rearrangements in any single department to be considered on their merits.

Aberdeen. The students' magazine, *Alma Mater*, contains in the last number of its "majority" volume a long article by A[lexander] M[ackie] on Dr. Bain's "Autobiography" (which we notice in another column). A. M. writes:

The issue of this book is an event of some importance to the Alma Mater of which Dr. Bain was an eminent product, and on which he exerted for many years a potent influence. Not only was he, in part, made by the University, but he repaid the debt by reacting on her destiny, and had much to do with the shaping of a certain period of her history. Even yet his influence is not exhausted, and this, the latest work from his pen, will preserve to posterity a permanent record of his academic career and the part he played in the teaching and administration of the University, as well as in the wider fields of philosophic thought. The book is one of exceptional interest, in so far as it details step by step the rise of a youth from the very humblest walk of life not only by distinction in his own country, but to fame outside his native land and to recognition as an original thinker of no mean order amongst the writers of his own day who were most entitled to speak. From the weaver's loom, through a twenty years' tenure of a Chair of Logic, to the dignity of the Lord Rectorship is, we believe, a unique elevation; and the remarkable thing is that these achievements were attained by no adventitious strokes of fortune, but were honestly earned by strenuous, persistent, and unremitted toil, by sheer force of will power combined with singular aptitude in learning. . . . The outstanding value of the book is its delineation of a man of unflinching energy of purpose, of one who crowned himself with the iron crown of duty, whose life was work—an impressive lesson alike to student and professor—a lesson that in this age of distraction and easy-going superficiality is very urgent.

The celebration of the quatercentenary of the University is postponed till 1906.

THE CLASSICAL ASSOCIATION OF ENGLAND AND WALES.

The feature of the Oxford meeting of the Classical Association of England and Wales was the brilliant oration which the Treasurer, Mr. Mackail, delivered on the place of Latin and Greek in human life. The introductory speeches of the Vice-Chancellor, Dr. Monro, and of the Master of the Rolls, the President of the Association, dealt with different aspects of the interests of classics, their importance as a field for the scholar's research, and their value as an instrument of education and culture, the President in addition emphasizing the character of the policy of the Association as one of defence and not of defiance. Prof. G. G. Ramsay, President of the Classical Association of Scotland, and Admiral Sir C. Bridge welcomed the foundation of the new body, the latter urging, from his own experience, the advantage of a classical training to the Naval officer.

The business meeting which followed was chiefly occupied with the organization of the society. Matters of more general interest were the decision, aftser ome discussion, to hold the next meeting in January, 1905, the place to be London; the fixing of the terms of subscription, viz., five shillings entrance fee and an annual payment of the same amount, those who join in the present year paying the entrance fee only; and the adoption of a resolution that a committee should be appointed to consider the rather thorny question of the spelling and printing of Latin texts, this committee to be instructed to confer with the Assistant Masters' Association upon the subject.

The educational discussion was opened by Mr. J. W. Headlam. His subject was the teaching of classics in schools. He laid down that the real issue as regards the school curriculum was not whether the education was to be in science or in classics, but whether the humanistic element was to take the form of classics or of modern languages, English, or other subjects grouped together as modern education. The chief weakness of our present classical teaching was the undue prominence given to its linguistic and especially to its grammatical side. Greek and Latin composition also had too much time allotted them. With less stress laid on these subjects, the thought and subject-matter of the classics would have a better chance. It should not be forgotten that the classics had the great advantage of compactness, offering all they had of educational value within a very narrow compass. Mr. Arthur Sidgwick insisted on the desirability of inquiry and experiment. Classics should not be taught to the wrong people. Methods of teaching could and should be improved and teachers should be trained. The Head Master of Birmingham (Mr. R. C. Gilson) held that the source of our difficulties was the truncation of the old classical course—good in itself, but needing more time than could now be spared. He would teach less Greek, less syntax, but hardly less composition. The Warden of Wadham thought something might be said for interlinear translations as an instrument of teaching. The Head Master of Haileybury hoped that the meeting would bring about a friendly conference between leading representatives of classics and science, a result of which might be a *modus vivendi* in secondary schools. Other speakers followed, but the time limit, which had to be applied, made the discussion rather desultory. Between seven and eight hundred have now joined the Association.

CANON DANIEL.

It is with deep regret that we record the death of the Rev. Canon Evan Daniel, who had for many years occupied a prominent position among English educationists. Trained as an elementary-school teacher at St. John's College, Battersea, he became Lecturer in English Literature, then Vice-Principal, and, finally, in 1866, Principal of that famous training institution, a position which he filled with great distinction for twenty-eight years. In 1873 he was elected a member of the School Board for London, on which he served for six laborious years. While thus more immediately connected with the training of teachers for public elementary schools, he took an active part in the discussion of subjects connected with the organization and improvement of secondary education, and a lucid and succinct setting out of the conditions of the problem will be found in an address delivered by him nine years ago at the College of Preceptors on the occasion of a public distribution of prizes at which he presided.

In 1880 Canon Daniel was appointed lecturer on the practice of education to the College of Preceptors, and for fourteen years he delivered most valuable courses of lectures which from first to last were attended by more than seven hundred students, the great majority of whom were engaged in teaching in secondary schools. From 1880 to the day of his death he was a member of the Council and of the Examining Board of the College of Preceptors, and for thirteen years one of the Vice-Presidents. Both as lecturer and examiner the thoroughly practical character of his mind was conspicuous. No trace of the doctrinaire was to be found in him, and no examinee could have reason to complain of want of consideration on the part of his judge.

Canon Daniel was ever the most affable and reliable of colleagues, the most dignified and impressive of chiefs, and, though a strict disciplinarian, the most tolerant and considerate of teachers. Yet those who knew him were aware that in matters of principle he was unbending, and he was always ready to break a lance with opponents on what he deemed to be essentials in educational controversy. An easy and graceful writer and a lecturer on educational subjects for nearly forty years, it is somewhat remarkable that his name is not found among the authors of books on educational methods and practice, and it is to be regretted that the body of educational doctrine which he so ably and sympathetically expounded in his lectures was never brought together by him in the form of a compendium for the benefit of present and future generations of teachers. Canon Daniel's preferment in 1899 to the Vicarage of Horsham necessarily withdrew him, to a large extent, from his previous activities in the field of education, and while teachers may regret the diversion of his energies to another field of action, the friends of the Church of England have also to lament that he was called away before his course was fully run.

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PRIVATE SCHOOLS AND THE LOCAL AUTHORITY.

By A. Millar Inglis, Maidenhead College,
formerly President of the Private Schools' Association, Incorporated, and County Hon. Secretary of the Reading and County Branch.

[*From the "Maidenhead Advertiser."*]

The position of the private schools under the new Education Act is so little understood that it may now be of advantage to those interested to have some statement thereupon placed before them.

In recent years the Education Bills before Parliament have all been based more or less on the Report of the Royal Commission on Secondary Education, 1895. This Commission was composed of the following members:—Mr. Bryce (Chairman), Mr. Hibbert, Canon Lyttelton, Sir H. Roscoe, Dr. Maclure, Dr. Fairbairn, Dr. Jebb, Dr. Wormell, Mr. H. Hobhouse, Mr. M. Sadler, Mr. Llewellyn Smith, Mr. Cockburn, Mr. C. Fenwick, Mr. Yoxall, Lady F. Cavendish, Dr. Sophie Bryant, and Mrs. Sidgwick. Its composition silences any one disposed to raise a political quibble as to the findings. There was no minority Report.

The unfortunate religious controversy that has raged round elementary education has allowed one almost to forget that the Act of 1902 gives to Local Authorities important powers over secondary education—a fact that many will only recognize when face to face with an ever-increasing education rate.

To facilitate passing through Parliament the part of the new Act relating to secondary education was reduced to a skeleton—a blank cheque to be filled up by the Local Authority; who, however, are bound by the two sections quoted below. They are, moreover, morally bound to consider these sections in the light of the Report of the Royal Commission.

Perhaps the question will be best understood by quotations from authorities, the chief of which are: (1) the Report of the Royal Commission, (2) the Education Act of 1902, and (3) the Bedfordshire Scheme for Higher Education.

The first will show what was in the minds of those who framed the second, and the third will show how the Act has been interpreted by the Education Committee of a county of the highest rank in educational matters.

The Education Act of 1902 will be what the Local Authority in their wisdom or unwisdom make it.

An Unbiased Opinion.

The editor of *Education*, the official organ of the County Councils' Association, writes: "We hold no brief for private schools; but we strongly sympathize with them, and are bound to recognize the splendid service they have rendered to the nation, and the great work they have performed in the face of many difficulties." "It is not too much to say that the success of the secondary education work of the Authorities—at any rate, for some years to come—will depend almost entirely upon the manner in which they treat the private secondary schools."—*Education*, June, 1903.

I. From Report of the Royal Commission.

Opinion regarding Private Schools.

"There are private schools, too, of every degree of merit, from those which, conducted in excellent buildings by an excellent staff, are in the van of educational progress, to those which, carried on in ill-ventilated rooms by ignorant persons with no qualifications as teachers," &c.—*Report*, page 148.

"There is an almost universal agreement among our witnesses that it would be a misfortune if good private and proprietary schools were to cease to exist, that they are doing much good work, that they fill a place which cannot altogether be taken by public schools, and that they ought therefore to be reckoned as part of the educational supply of the country."—*Report*, page 148.

Undue Competition.

"So far from attempting to induce uniformity, we trust that a free and spontaneous variety, and an open field for experiment and enterprise of all kinds, will be scrupulously observed."—*Report*, page 257.

"Where it can be shown that private or proprietary schools sufficiently provide for any educational need of a district, the Local Authority should not compete with them."—*Report*, page 150.

Recommendation to Local Authority.

"We have already indicated an opinion that any school which is the property of and managed by a group of private persons, whether corporate or unincorporate, or is owned by one person and managed for his own profit, may properly be recognized by the Local Authority as contributing to the local supply of secondary education, whenever such a school can show that the instruction it gives is efficient of its kind. So far from desiring to displace, or even to weaken, such schools as these, we trust that some of the measures we recommend may tend to stimulate and improve them."—*Report*, page 292.

"The adhesion of such schools (private and proprietary) will tend to raise the general level of instruction: incompetent teachers will by degrees vanish away, and the legitimate rivalry of the most efficient private schools will lessen any risk there may be of stagnation or monotony in schools under public management."—*Report*, page 294.

"We accordingly recommend . . . that it shall be the duty of the Local Authority to make, with the proprietary or private schools, arrangements by virtue of which they will be recognized as supplying efficient education so long as they comply with certain prescribed conditions calculated to secure efficiency. These conditions . . . ought as far as possible to be uniform."—*Report*, page 274.

Continuity of Private Schools.

"This last objection (viz., 'the frequently ephemeral nature of private schools, which might be efficient one year and, owing to the death of the master, either have disappeared or become inefficient another') . . . is, we think, of little weight in the case of any private schools of whose continued efficiency the Local Authority satifies itself at suitable intervals, and we may observe that uninterrupted efficiency cannot be guaranteed even in the case of publicly managed schools . . . "—*Report*, page 152.

Private Profit.

"Schools of the latter two classes are currently characterized as 'schools conducted for private profit' or schools in which the head master has a pecuniary interest. The phrase is invidious, although it has a certain technical accuracy. The public school, whether endowed or rate-founded and supported, is the property of no man, and as a property does not yield profit to any man; but this cannot be so truly said of it when viewed as a school conducted by men who have made teaching the business of their lives. The head master of a public school may benefit, in his own way, quite as much as the master of a private school by the school's success."—*Report*, page 137.

Cost of Secondary Education.

The minimum cost of secondary education may be estimated at £10 per head for schools of 200 to 300 pupils. This estimate excludes rent or interest on capital for buildings (*vide* "Report," page 187). It follows that, if the numbers are smaller, and if allowance is made for rent, the cost must be greater; and in this lies the explanation why heads of private schools have sometimes been forced to conform in some respects with the wishes of those parents able to pay the higher fees.

II. Education Act, 1902.

"The Local Education Authority shall consider the educational needs of their area and take such steps as seem to them desirable, after consultation with the Board of Education, to supply or aid the supply of education other than elementary and to promote the general co-ordination of all forms of education . . . "—Section 2 (1).

"A Council, in exercising their powers under this part of the Act, shall have regard to any existing supply of efficient schools or colleges . . . "—Section 2 (2).

III. From the Bedfordshire Scheme for Higher Education.

"That no school or institution should be aided or recognized as efficient unless the accounts are presented in a form acceptable to the Local Education Authority, that form, in the case of proprietary or private schools, including only the salaries of assistant teachers and the expenditure of sums granted by the Local Education Authority.

"That, provided adequate inspection is secured, it is not essential that the Local Education Authority should be represented on governing bodies, and so become partially responsible for the existence of conditions the control and modification of which are within their functions.

"That, where possible, the Local Education Authority should make or refuse grants to schools which are conducted for private profit in the same way and on the same conditions as such grants are made or refused to schools conducted on a purely public basis."—*Bedfordshire Scheme*, page 17.

"They consider that the best proprietary or private schools have been, in the past, pioneers of educational improvement, and that their continued existence, efficiency, and rivalry will diminish the risk of stagnation or rigidity in the public management of schools. They do not therefore propose to exclude these proprietary or private schools which apply for recognition by the Local Education Authority from the advantages arising from the administration of local funds to which they are admitted under the Education Act, 1902. . . . The Committee are prepared to receive and consider from all recognized schools, public and private, applications for capitation grants, for the supply of teachers, and for capital grants for the supply and upkeep of fittings, apparatus, and appliances for instruction. In all cases where grants of the latter class are made no extra fees should be charged for instruction; the Education Authority should retain a lien upon the fittings, apparatus, or appliances to the cost of which they have contributed, and a contract should be entered into with the proprietors, governors, managers, or trustees, for their return in case the school ceases to be recognized as efficient."—*Bedfordshire Scheme*, page 18.

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TEACHERS' REGISTRATION COUNCIL.

THE Report of the Teachers' Registration Council for 1903, with an appendix of pertinent documents, indicates considerable progress. During the year 2,634 schools were submitted for recognition, and 1,954 were dealt with, 459 failing to secure recognition. The arrears of 1902 were cleared off, and of course those submitted at a late date in 1903 necessarily stood over. The Council does well to press upon the Board of Education the inconvenience, and even hardship, of delays. In 1902 arrangements were made for the recognition of schools in Scotland; and now applications are being entertained from schools in Ireland, in the British Colonies, and even in India.

Column A at the beginning of 1903 was represented by some 80,000 names, to which over 5,000 would have to be added to bring the list up to the end of the year. This register is a card register. At the end of 1903 Column B contained 4,506—2,283 men and 2,223 women; 1,212 applications having been rejected, and 1,148 remaining not dealt with. Out of 5,229 applicants—2,249 men, 2,980 women—during the year 4,045 were registered—2,024 men, 2,021 women. The Council note that the 4,506 applicants registered in 1903 "cannot in any way be regarded as covering even one quarter of the number of head and assistant teachers who are qualified for registration."

The total number of applications received from 1,742 recognized schools in England and Wales, exclusive of those represented by the Head Masters' Conference, appears to yield an average of from two to three applicants per school. For a hundred schools represented by the Head Masters' Conference the corresponding average is from five to six. In each case the figures would seem well below the average number of the staff qualified for admission to Column B.

Finance is the Council's great difficulty—the general fate. However, they have managed to repay the £500 advanced to the Registration Fund by the Treasury in 1902; so that they have met the establishment charges out of revenue if they have not yet obtained any remuneration for their own services. "A request to sanction the payment of fees to members of Council for attendance at meetings—estimated at a maximum total of £500 per annum, and clearly contemplated under Section 13 of the Order—has been refused for lack of funds." The request seems very modest—£500 would not go far among a dozen participants—and the refusal is scarcely in the Imperial manner. Nor are funds forthcoming for the publication of the Register. The whole expenditure, in fact, is at present cast upon the revenue from Column B—a very limited column. Still, the cost of publication is sufficiently serious: "an estimated initial cost of £3,000 and an annual revision at £1,000." Even if this be "one of the main objects of Registration," one cannot but doubt whether its accomplishment is worth so much money, and whether the virtual publication by declaring the Register open to the public is not sufficient for practical purposes. Messrs. Swan Sonnenschein & Co. have solved the difficulty so far as concerns Column B.

The Council, experienced as they are, have been much exercised over the definition of a "head master" for the purposes of the last clause of Regulation 4, and evidently their differences with the Board on this point had better be settled, as they sensibly suggest, by an amendment of the Order. With regard to teachers in training colleges and at Universities, there appears to have been some "anomaly" arising out of the Council's interpretation of the Board's interpretation of the phrase "teaching other than of a purely elementary character" in Regulation 5 (2) (*b*). We learn that it "arose from a temporary misunderstanding, and that the policy adopted by the Council has since undergone revision," and presumably the "anomaly" is at an end. There is difficulty also over Regulation 3 (2) (i.) (*b*), which the Council propose to interpret as authorizing them to regard two terms of training together with one term of student-teachership in a school recognized for Regulation 3 (2) (ii.) as equivalent to a continuous year of teaching. Meantime, the Board regard this interpretation as inadmissible under the terms of the Order. However, the Cambridge Conference approved such a course of training, and here again an amendment of the Order seems called for. The Council further recommend that the combination of one term of training and two terms of student-teachership should be admitted as an equivalent—which is, perhaps, more debatable. The Supplemental Registers are not getting on, and no doubt the Council are right in suggesting that the classes that are easier to deal with had best be tackled first. The ascertainment of "ability to teach" is another thorny subject on which the Council offer very sensible suggestions.

We are not surprised to learn that the discretion granted under Regulation 5 (2) (*b*) "has had a wide effect. In removing the barrier to registration which excluded a number of efficient teachers of long standing who fell short of the academic qualifications necessary under the original Order, the Board has recognized the claims of a large and deserving class."

The Report, on the whole, is reasonably encouraging; and the discreet activity of the Council should lead to further relaxations of red tape.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

THE POSITION OF PRIVATE SCHOOLS.

To the Editor of "The Educational Times."

SIR,—Your leading article last month dealing chiefly with the Easter Conference of the P.S.A.I. bears gratifying testimony to the devotion of private-school teachers to the cause of education. It seems to me, however, that it may in one respect give those who do not know much about the work of the Private Schools' Association a wrong impression. It is true that at Oxford educational subjects were more prominent than the present critical position of many private schools, but it would be a mistake to conclude from the report of these proceedings that the Association was not alive to the practical necessity for doing its utmost to secure fair treatment for the class of schools which it represents. A great deal of work has been done recently in the way of bringing the claims of private schools before members of Parliament and County and Borough Councillors. Deputations have been sent to the Consultative Committee, to the London County Council, and to other bodies, and, as the number of *Secondary Education* which contains the report of the Oxford Conference shows, numerous meetings in various parts of the country have been held, in which a strenuous endeavour has been made to enforce the claims of private-school teachers to fair consideration. There is no doubt that, as you say, "the private schools have to fight their own battle if it is to be fought successfully." What is sometimes forgotten is that through the Association they are fighting, and, as the Bedford County scheme and some other facts seem to show, not altogether unsuccessfully.

Your candid criticism and welcome testimony to "the high national value of the services of the conductors and teachers of private schools" ought to prove a stimulus and encouragement to those who are engaged in a momentous struggle for the preservation of the freedom and variety which distinguish our present provision for secondary education. I will not trespass further on your space, but hope you will allow me to add that, if any of your readers who are interested in knowing what work is being done by our Association will write to the Secretary, P.S.A.I., 9 Bedford Court Mansions, for particulars of Dr. Sibly's scheme and other papers, he will discover—if he does not already know—that the Association is alive to the difficulties and dangers of the present crisis, and is doing its best to enable private-school teachers to overcome them. This letter is in no sense an official communication, but I write as one who has been intimately acquainted with the work of the Association for many years, and who knows that with its "leading spirits" there is no tendency to neglect the practical work necessary for the defence of private schools.—I am, Sir, &c.,

THE EDITOR OF "SECONDARY EDUCATION."

TRY DENMARK.

To the Editor of "The Educational Times."

SIR,—For twelve years and more Denmark and her sister lands have been my happy hunting ground, and many of my results have, as you know, appeared for the first time in the columns of *The Educational Times*. But I have also urged that the things I have written about should be *seen* if they are to produce their full effect. And the opportunity of seeing most of them is provided this year for the third time by Miss Bulin, formerly of

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Somerville College, Oxford. From August 9 to 19 inclusive, she has arranged with rare skill and great good fortune a rapid succession of lectures, discussions, visits, and excursions, which, in a higher degree than anything of the kind I ever heard of, give the students of one nationality the beginnings of a first-hand exact knowledge of what another nationality is doing in the way of social reform, municipal government, co-operation, education, and the like. Miss Butlin is a trained investigator of economic problems, feels how much she has learnt from her prolonged residences in Copenhagen, and wishes to share with her countrymen and countrywomen the advantages she has gained. And, having myself been a member of her course two years ago, I should like Englishmen to show their gratitude by mustering this year a hundred strong, as against the fifty of last year and the year before. I know no better opportunity for city or county councillors or for earnest teachers of any grade who are ready to welcome new and fruitful ideas. Everything is in English. The lecturers comprise some of the best University professors and *docents*, members of Parliament, high-school teachers, and leaders of social movements that Denmark can boast. As to the expense, if a man leave home on Saturday, August 6, and land in England again early on Monday, August 22 (travelling first-class on the steamer), he need not, Miss Butlin says, spend more than nine guineas (inclusive); and, if he has to study severe economy and is willing to do as I do in Denmark, I can show him how to do it for seven guineas. Those who wish for full printed particulars of every kind should address themselves to Miss F. M. Butlin, Old Headington, Oxford.

University College School, W.C. J. S. THORNTON.
June 21, 1904.

COLLEGE OF PRECEPTORS.

MEETING OF THE COUNCIL.

A MEETING of the Council was held at the College, Bloomsbury Square, on June 18. Present: Sir Philip Magnus, Vice-President, in the Chair; Prof. Adams, Mr. Armitage-Smith, Mr. Barlet, Mr. Baumann, Rev. Canon Bell, Rev. J. B. Blomfield, Rev. A. W. Boulden, Mr. Bowen, Dr. Breul, Mr. Butler, Mr. Chettle, Miss Crookshank, Mr. Eve, Mr. Hawe, Mr. Holland, Rev. G. E. Mackie, Mr. Millar-Inglis, Mr. Pinches, Miss Punnett, Mr. Rule, Mr. Rushbrooke, Rev. Dr. Scott, Mr. Starbuck, Mr. Storr, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported an increase of about 240 candidates entered for the Midsummer Certificate and Lower Forms Examinations, as compared with the last Midsummer Examinations.

He reported that the new Catalogue of the Library was nearly completed, and would, it was hoped, be sent out to the members before the Long Vacation.

Saturday, July 23, was fixed as the date of the next Ordinary General Meeting of the members of the College.

The report of the Special Committee appointed to consider proposals for the Federation of Associations of Secondary Teachers was considered, and the following resolution was unanimously adopted:—"That the Council are of opinion that, taken as a whole, the proposals submitted to them deserve their favourable consideration as tending to promote the objects for which the College was founded, under conditions likely to secure the union of those engaged in secondary education."

The draft report of the Council to the General Meeting was considered, and referred to the President, Vice-Presidents, and Dean for final revision.

Mr. J. L. Butler, B.A., The Douglas School, Cheltenham, was elected a member of the Council in place of Mr. Leetham, resigned.

The following persons were elected members of the College:—

Mr. H. Bendall, M.A, 37 Norfolk Street, Strand, W.C.
Miss H. G. Bowyer, 23 Kensington Square, W.
Rev. T. C. Fry, D.D., Berkhamsted School.
Mr. S. G. F. Wilson, 8 Oakhurst Grove, East Dulwich, S.E.

The following books had been presented to the Library since the last meeting of the Council:—

By E. ARNOLD.—Oman's Junior History of England; "Poets' Corner": a Book of Verses for Children.
By G. BELL & SONS.—Besant and Ramsey's Hydrostatics; Headlam's Translation of the Agamemnon of Aeschylus; Pendlebury's New School Arithmetic, Part I.
By MACMILLAN & CO., LTD.—Frazer's Le Théâtre à l'École.
By METHUEN & CO.—Methuen's Examination Series—Examination Papers on Horace, Vergil, and Thucydides; Junior Examination Series—Geography and German.
By RIVINGTONS.—Hassall's Tudor Dynasty.
By G. ROUTLEDGE & SONS, LTD.—Ludgate Nature-Study Readers (4 vols.); Ludgate Standard-Author Readers (4 vols.); Ludgate Story Readers (7 vols.); Sonnenschein's Reading in a Twelve-month (9 vols.); and Spelling and Dictation Book (3 vols.).
Calendar of Edinburgh University.
N.U.T. Report, 1904.

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CURRENT EVENTS.

Fixtures.

The half-yearly General Meeting of the members of the College of Preceptors will be held at the College on Saturday, July 23, at 3 p.m.

* * *

Prof. J. Adams, M.A., B.Sc., F.C.P., will deliver a course of twelve lectures on "Practical Applications of the Art of Teaching" at the College of Preceptors, to commence on September 29.

* * *

A course of Nature Study will be held at the Horticultural College, Swanley, Kent, August 1–13. Introductory and valedictory addresses by Hon. Sir John Cockburn, M.D., K.C.M.G., and Mr. J. C. Medd, M.A. Three courses: (1) Studies in Common Country Animals (F. Finn, B.A., F.Z.S.); (2) Studies in Plant Life and Plant Economics (R. Tabor, F.L.S.); (3) Garden Lectures and Demonstrations (Miss Turnor, Outdoor Superintendent). Various other lectures. Fee (teaching, board, and lodging), £5. Apply to Miss Sieveking, Hon. Sec., 17 Manchester Square, London, W.

Honours.

The Oxford list of honorary degrees, on the first public appearance of the new Chancellor (June 22), was a very full one:

D.C.L.: His Excellency the French Ambassador (M. Paul Cambon), his Grace the Archbishop of Canterbury, the Bishop of Worcester, Lord Balfour of Burleigh, Lord Tennyson, Lord Curzon of Kedleston, the Speaker of the House of Commons, Mr. George Wyndham (Chief Secretary for Ireland), Mr. H. H. Asquith, K.C., M.P., the Master of the Rolls, Admiral of the Fleet Sir Frederick W. Richards, Lieut.-General Sir John D. P. French, K.C.M.G.; Prof. Pasquale Villari, Senatore del Regno, Mr. D. B. Monro, M.A. (the Vice-Chancellor, Provost of Oriel), Mr. John Singer Sargent, R.A., Mr. Charles Booth (President of the Royal Statistical Society).

D.Sc.: The Hon. Charles Algernon Parsons (St. John's, Cambridge), M. Pierre Curie (Professeur de Physique Générale de l'Ecole Municipale de Physique et de Chimie Industrielles), Sir William S. Church (President of the Royal College of Physicians), Sir Andrew Noble, Bart, K.C.B., Sir William Crookes, F.R.S., Sir David Gill, LL.D. (Astronomer Royal, Cape of Good Hope), Sir John Murray, F.R.S., Mr. Alfred Marshall (Professor of Political Economy, Cambridge), Mr. Joseph J. Thomson (Cavendish Professor of Experimental Physics, Cambridge), Mr. Horace Lamb, LL.D., F.R.S. (Professor of Mathematics, Victoria University, Manchester), Mr. Andrew R. Forsyth (Sadlerian Professor of Pure Mathematics, Cambridge), Mr. James Dewar (Fullerian Professor of Chemistry in the Royal Institution), Mr. Joseph Larmor (Secretary of the Royal Society, Lucasian Professor of Mathematics at Cambridge), Signor Guglielmo Marconi (Member of the Grand Cross of the Order of the Crown of Italy).

D.Litt.: Lord Reay (President of University College, London, and of the British Academy), Sir Spencer Walpole, K.C.B., Mr. William D. Howells (the American novelist), Mr. Lewis Campbell, LL.D. (Emeritus Professor of Greek in the University of St. Andrews), Mr. William L. Newman, Mr. Andrew Lang, Mr. John K. Laughton (Professor of Modern History at King's College, London), Mr. Walter Leaf (Fellow of London University).

* * *

The University of Oxford has conferred the honorary degree of M.A. on Mr. F. A. Bellamy, F.R.A.S., First Assistant at the University Observatory.

* * *

Cambridge University has conferred the honorary degree of LL.D. on Archimandrite Porphyrios Logothetes, Archbishop-elect of Mount Sinai.

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THE University of Dublin has conferred the following honorary degrees:

Litt.D.—Miss Jane Barlow; Sophie Bryant, Principal of the North London Collegiate School for Girls; Thomas Rice Holmes; Prof. Friedrich Leo, Göttingen; Wallace Martin Lindsay, Professor of Humanity, St. Andrews.

Sc.D.—James Dewar, Jacksonian Professor of Experimental Philosophy, Cambridge, and Fullerian Professor of Chemistry at the Royal Institution; Prof. Jacobus Henricus Van 't Hoff, Berlin; Prof. Felix Klein, Göttingen; Major Ronald Ross, C.B., Professor of Tropical Medicine, Liverpool; Jethro Justinian Harris Teall, F.R.S., Director of the Geological Survey of the United Kingdom; Wm. Henry Thompson, King's Professor of the Institutes of Medicine.

LL.D.—Miss Isabella Mulvany; James H. Campbell, K.C., M.P., Solicitor-General for Ireland; the Hon. Hill Irvine, late Premier and Attorney-General of Victoria; Sir Thomas Wm. Snagge, of the County Court, Oxford.

* * *

MANCHESTER UNIVERSITY has conferred the honorary degree of D.Litt. upon Prof. Rein, of Jena.

* * *

THE University of Durham has conferred the honorary degree of D.C.L. on Sir Daniel Morris, K.C.M.G., and the honorary degree of Mus.Doc. on Dr. (now Sir) Edward Elgar.

* * *

THERE were a few educational names in the Birthday Honours list:

C.B.: H. M. Lindsell, Principal Assistant Secretary, Board of Education.

C.M.G.: Walter B. Spencer, M.A., President of the Professorial Board of the University of Melbourne.

Kaisar-i-Hind Medal of the First Class: Edalji Dorabji Talati, B.A., Head Master, Ahmedabad High School.

C.I.E.: Alexander Monro, M.A., B.C.L., Director of Public Instruction, Central Provinces; and C. W. Waddington, M.A., Principal of the Mayo College, Ajmer.

* * *

MR. H. GREGORIUS BROWN, master in physical training, Leeds, has been made Officier d'Académie.

Endowments and Benefactions.

MRS. PERCY SLADEN, of Northbrook Park, Devonshire, has given £20,000 in trust for the promotion of "any research or investigation in natural science, and more especially in the sciences of zoology, geology, and anthropology," in memory of her late husband, Mr. Walter Percy Sladen, sometime Secretary and Vice-President of the Linnæan Society.

* * *

KING'S COLLEGE appeals for £5,000 to provide new laboratories, reference library, and additional lecture rooms, in connexion with the Women's Department of the College, in Kensington Gore.

* * *

A PARENT of one of the present students at Girton College has offered to contribute £2,000 towards reduction of the debt on the new buildings on condition that an additional sum of £18,000 be raised before July, 1907. A strong appeal has been issued for the fulfilment of the condition. Subscriptions may be paid to the Bursar, Miss M. Pickton, 54 Abingdon Court, Kensington, W., or to the "Girton College" account at Barclay's Bank, Cambridge.

* * *

SIR JOHN JACKSON, LL.D., has promised to set aside £5,000 in 5 per cent. preference shares of Sir John Jackson, Ltd., as a permanent memorial to the late Prof. Tait, the income of which will be applied in promoting practical research in the physical laboratory of the University of Edinburgh.

* * *

THE working men of Sheffield are showing remarkable spirit in raising funds for the projected University.

THE Aberystwyth Town Council has made a grant of £30 a year to the University College for scholarships—not restricted to Aberystwyth.

* * *

THE Working Men's College, which is to signalize its jubilee by establishing itself in new buildings in Crowndale Road, St. Pancras, where the foundation-stone is to be laid by the Prince of Wales on July 16, wants some £8,000. Contributions may be sent to Prof. A. V. Dicey, the Principal, The Orchard, Oxford; Lionel Jacob, Vice-Principal, 43 Buckland Crescent, N.W.; R. J. Mure, Bursar, 7 New Square, Lincoln's Inn; or to the Secretary, Working Men's College, 46 Great Ormond Street.

Scholarship.

THE South Wales Institute of Engineers has instituted a scholarship, £70 a year for three years, at South Wales University College.

Appointments and Vacancies.

AT University College, London, Dr. Gregory Foster, Secretary to the College and Assistant Professor of English Language and Literature, has been appointed Principal as from September 1 next, in succession to Dr. Carey Foster.

Mr. C. P. Sanger has been appointed Assistant Professor in Economics; Mr. R. W. Chambers, B.A. (Librarian), Assistant Professor in English Language and Literature; Mr. Philip Wicksteed, Jevons Memorial Lecturer for 1905 and 1906; and

Mr. Tansley, Lecturer in Plant Anatomy for a term of three years.

* * *

MR. CHARLES HARDING FIRTH, M.A., LL.D., Fellow of All Souls, has been appointed Professor of Modern History in the University of Oxford, in succession to the late Prof. York Powell.

* * *

MR. E. A. BECK, M.A., Master of Trinity Hall, has been elected Vice-Chancellor of Cambridge University for 1904–05.

* * *

PROF. A. C. BRADLEY has been appointed Gifford Lecturer on Natural Theology in the University of Glasgow for 1906–7 and 1907–8.

* * *

PROF. G. TURNBULL LADD has resigned his Professorship of Mental Philosophy at Yale, and retires from active academic work.

* * *

MR. J. GILBART SMYLY has been appointed Professor of Ancient History in Trinity College, Dublin, in room of Dr. Tyrrell; and

Mr. W. A. Goligher has been appointed Professor of Latin, in room of Dr. L. C. Purser.

* * *

MR. JOHN WALTER GREGORY, D.Sc., F.R.S., Professor of Geology in the University of Melbourne, has been appointed to the Chair of Geology in the University of Glasgow. Prof. Gregory was geologist to Sir Martin Conway's Spitzbergen expedition.

* * *

MR. HUGH GUNN, M.A., has been appointed Director of Education for the Orange River Colony, in succession to Mr. E. B. Sargant.

* * *

MR. ROBERT BLAIR, M.A. (Edin.), B.Sc. (Lond.), Technical Instruction Secretary to the Department of Agriculture and Technical Instruction, Ireland, has been appointed by the Education Committee of the L.C.C. "Executive officer for the performance of duties in connexion with the work of education in London"; and

Mr. Henry John Mordaunt, M.A., Board of Education, has

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been appointed Chief Clerk of the Education Branch of the Department of the Clerk of the Council.

* * *

Dr. James Young Simpson, M.A., D.Sc., F.R.S.E., has been appointed to the Chair of Natural Science in the Edinburgh and Glasgow United Free Colleges.

* * *

At Leeds University the following appointments have been made:—

Dr. W. Rhys Roberts, Professor of Greek in the University College of North Wales, to be a Professor of Classics;

Mr. B. M. Connal, M.A., Lecturer in Latin at the Yorkshire College, to be a Professor of Classics;

Mr. Percy F. Kendall, F.G.S., Lecturer in Geology at the Yorkshire College, to be Professor of Geology;

Mr. J. B. Cohen, B.Sc., Ph.D., Lecturer in Organic Chemistry at the Yorkshire College, to be Professor of Organic Chemistry; and

Mr. H. W. V. Temperley, B.A., of King's College, Cambridge, to be Assistant Lecturer in History.

* * *

At Cardiff University College, Mr. T. Raymont, Lecturer in Education, has been elected Professor of Education, and the following Lecturers, who are also heads of departments, have been appointed Associated Professors:—M. Barbier in French, Mr. Boulton in Geology, Dr. Trow in Botany, and Mrs. Millicent Mackenzie (wife of Prof. Mackenzie) in Education. Dr. Perman has been appointed Assistant Professor of Chemistry, and Mr. R. H. Pinkerton Assistant Professor in Mathematics.

* * *

Mr. W. F. Storr, University College, Oxford, has been appointed University Lecturer in the Philosophy of Religion at Cambridge.

* * *

Mr. Alexander Blacklaw, solicitor, has been appointed Clark Lecturer in Procedure, Evidence, and Commercial Law in the University of Aberdeen.

* * *

Mrs. Jessie White, D.Sc. (Lond.), has been appointed Vice-Principal of the Home and Colonial Society's Kindergarten Training College and Head Mistress of the High School for Girls at Highbury Hill House, N.

* * *

Mr. W. E. Urwick, M.A., Lecturer in the University of Durham, has been appointed Principal of the Manchester Pupil-Teachers' College.

* * *

Mr. C. F. Herdener, B.A., chief modern language master, Berkhamsted School, has been appointed Lecturer in French and German in Durham University.

* * *

Dr. T. Martin Lowry has been appointed Lecturer in Science at the Westminster Training College.

* * *

Mr. Christopher Darling, B.A., second master, Leeds Boys' Modern School, has been appointed Head Master of Mirfield Grammar School.

* * *

Mr. E. H. Crump, B.A., second master, Birkenhead Institute, has been appointed second master, Leeds Boys' Modern School.

* * *

Mr. W. J. Sharples, M.A., second master, St. Olave's Grammar School, has been appointed Head Master of Parmiter's School, in succession to Dr. R. P. Scott.

* * *

Mr. Charles W. Thomson, M.A., Grange Public School, Grangemouth, has been appointed Rector of Larkhall Academy.

Literary Items.

The *Record* (April–June) is an exceptionally good number. Mr. John Clarke gives an expository and suggestive review of the Education (Scotland) Bill; Mr. W. Mark Webb deals further with the progress and interpretation of Nature Study; the matter of the Mosely Commission Report is usefully classified so as to focus opinion upon the various points; and there is much serviceable matter on the Training of Teachers.

* * *

The forthcoming *Year-Book of Australia* will contain a special section dealing very fully with education in all grades throughout the Commonwealth.

* * *

Messrs. Bell will publish in autumn a collected edition of Dr. J. Holland Rose's essays and articles on the period 1795–1820, under the title "Napoleonic Studies." The volume will also contain three new essays—"The Idealist Revolt against Napoleon," "Pitt's Plans for the Settlement of Europe," and "Egypt during the First British Occupation." Several hitherto unpublished documents, including a new letter of Nelson's, will be given in an appendix.

Dr. Rose's "Life of Napoleon I." is about to be published in German by Messrs. Greiner & Pfeiffer, Stuttgart.

* * *

Historical students should see Sir Herbert Maxwell's article on "The Diary of Sir John Moore," by Sir J. F. Maurice, in the *Cornhill* for June.

* * *

An Analytical Index to the first 25 volumes of the *Educational Review* (January, 1891, to May, 1903, inclusive) has just been published (Columbia University; 3 dols., *plus* 12 cents for postage).

* * *

Mr. Fisher Unwin is adding to his thin-paper re-issue of the "Mermaid Series" "The Best Plays of George Chapman," edited by William Lyon Phelps, Instructor in English Literature at Yale.

* * *

The Oxford University Press has been awarded an ἀριστεῖον (equivalent to a Grand Prix) for its exhibit of books at Athens in connexion with the Hellenic Educational Congress.

General.

It has been resolved "that the memory of the late Cardinal Vaughan be perpetuated by the erection, in a locality as near as possible to the Westminster Cathedral, of a secondary day school for boys, of a character to meet all the requirements of the present day." It is expected that £25,000 will be required, and already £3,765 has been promised.

* * *

The movement for a proposed University memorial to the late Dr. Salmon, Provost of Trinity College, Dublin, is receiving active and influential support. The treasurers are Mr. Justice Madden, Vice-Chancellor of the University, and Lord Justice Fitzgibbon.

* * *

Prof. Wilhelm Rein, the famous Professor of Pedagogics in Jena University, has been delivering a series of lectures on the subject at Manchester University. Prof. Findlay is an old student of the eminent German educationist.

* * *

A considerable extension of the class-room accommodation at Hartley University College, Southampton, has just been completed, at a cost of about £2,500. The opening was celebrated by a *soirée* given (June 3) by the Duke of Wellington, President of the College.

* * *

The candidates for the June Cambridge Higher Local Examination number 1,062. The regulations for the ex-

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aminations in December, 1904, and in June, 1905, are now ready. In future, history, logic, psychology, political economy, and the history of education will be included in the Syllabus for the Examination in December as well as in June.

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St. Michael's College is to be removed from Aberdare to Llandaff. The cost of the new buildings will be some £20,000, about half of which has been already provided.

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The Principals and Professors of St. Andrews University, with Prof. Sir R. Jebb and Dr. Gilbert Murray, appeal for the commutation or mitigation of the sentence of two years' imprisonment recently passed upon Dr. Jannaris, late Lecturer in Post-classical and Modern Greek in St. Andrews University, by the law courts in Crete "for an alleged attack upon the present Cretan Government."

* * *

The "Aberdeen and North of Scotland Agricultural College" has been established at Aberdeen.

* * *

Comte Pierre Fourier d'Hincourt, B. ès L., B. ès Sc. (Paris), won golden opinions by his interesting lecture on the works of Edmond Rostand to the Société Nationale des Professeurs de Français en Angleterre at the College of Preceptors.

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The Board of Education have issued the Regulations and Syllabus (including Special Courses) for the Certificate Examination, 1905, for persons not being students in a training college.

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Mrs. Bryant's staff at the North London Collegiate School presented her with the hood appropriate to her Litt.D. of the University of Dublin.

THE USES OF BOOKS FOR EDUCATIONAL PURPOSES.

By H. C. Bowen, M.A.

At the Evening Meeting of the members of the College of Preceptors on June 15, Mr. Francis Storr in the chair, Mr. H. C. Bowen, M.A., read the following paper:—

I shall take it for granted that not many of those present who have had some experience in the teaching of children are willing to accept seriously and completely the advice of that mad genius who would have us abolish all books for school use and march with Emile into the wilderness, or the hardly less one-sided and extravagant views of those who, setting great store by mental exercise and mental development, would seem largely to ignore the material of knowledge needed for the mind to work with, and without which its exercise is as the ineffectual beating of wings in empty space. There was a time when teaching was taken to mean compelling the young to read, to mark, and to learn by heart the contents of books only, with the birch as sole agent of persuasion. But for some years there has been a reaction to this, and I cannot but think that the pendulum has swung somewhat too far in the opposite direction. For my present purpose I shall take it that we all of us as teachers, while no longer looking upon books as the be-all and the end-all here in education, nevertheless regard the attempt to abolish them entirely, to set back the clock of time and begin the world afresh, as hopeless and unwise for the individual and for the race—from the point of view of social evolution, and indeed from that of all scientific thought; and that we hold that no one can live wisely or effectively *by* himself only and *for* himself; that, in short, we accept Locke's view that the experience—and, I would add, the original research—of an individual life can never suffice for the needs and the nurture of that life. We are all of us dependent on one another. We cannot stand single and self-sufficient if we desire to make ourselves and our work the best we can make it; and to do so is our manifest duty. We may not, even if we would, renounce our royal inheritance, cut ourselves off from humanity past and present, and ingloriously slink out of action to the monastery or the desert. We are what the centuries—and not only our own short spans of life—have made us and are making us; centuries of human and other environments, direct and indirect. We cannot escape, even if we would, the effects of the past, whether it be a far-off past or a near past. Believing this, we shall not seek to deprive the younger folk about us—among whom we move and in whom we have our happiest being—of the profit and privilege of conferring with the thinkers and the workers of our own days and of the old days before us. And this they can best do by means of books.

Educative Functions of Books.

But, though I take this much for granted, that we are agreed that in every department of education *some* books at least are necessary both for learner and for teacher, still I think it would be well for us at this juncture to take stock of, to discuss, and to make clear to ourselves what are the chief functions which books should discharge in the education of the young—what are the nature and the extent of these functions, and in what ways may we, as teachers, best enable them to fulfil their educational purposes.

As it seems to me, we have, in the first place, to consider the characteristics and the characteristic differences of the impressions on mental consciousness made by concrete objects directly, and those made by language; and, in the second place, we must discriminate, as clearly as we may, between the characteristic effects of oral teaching and those of learning from books. After this we should make applications of our results to our particular school subjects.

Interplay of Perception and Conception.

It will not be necessary for me to describe the formation of *sense-impressions*, and of re-presented sense-impressions which are called *sense-ideas;* nor to do more than state the fact that, when these are set in a background of perceived though subconscious particular relations, we get what we term a *percept* (a percept being essentially particular, not general); and, further, that when we have examined a number of more or less similar objects (plants, for instance) and have generalized our perceptions so as to arrive at general conceptions of the relationships which they involve—that is, "when we have not only analyzed some particular plant, so as to distinguish the particular parts, but have analyzed a number of plants into parts more or less similar and more or less related, and have further recombined the generalized products of this distinguishing analysis into a generalized plant—we reach a *concept*"; and may then apply our concept to particular percepts of like character, and so give them a conceptual import—perception and conception playing backwards and forwards as experience develops and widens. All this is familiar enough; though it is well to note that it is by this interplay of perception and conception, which renders each of them progressively wider, richer, more accurate, that we rise into the region of *thought*, and that it is from this interplay that there is produced what we term *knowledge*.

Description and Explanation.

When we consider the use of language in connexion with these processes, in connexion with perception and its particular relations, we get, as Prof. Lloyd Morgan has so well pointed out, *description;* and, in connexion with conception and its general relations, we get *explanation*. And, were we as careful to discriminate as Shakespeare was, we should speak of *apprehending* —forming clear percepts of—a description, and of *comprehending* —forming clear concepts of and so understanding—an explanation.* In making and in receiving or apprehending a description, the mind combines into some sort of construction the material or information provided; and in the latter case especially it is quite evident that the receiver is much assisted in his constructing by the presence or presentation of some familiar model or analogy the general lines of which he may follow in his work. This constructive or synthetic mental process, as you know, we term *imagination;* and its perfection plainly depends upon the perfection and clearness of the percepts introduced and upon the clear understanding and appreciation of the language which accompanies them or which calls them up into the focus of consciousness. Hence, in work which is mainly concerned with the making and the apprehending of descriptions, the need for constantly refreshing, rectifying, and clarifying percepts and for the use of language as far as may be indicative of particulars and their particular relations rather than suggestive of general relations, direct, picture-making language. On the other hand, in

* As Theseus says, be we madman or lover, our shaping fantasies
"apprehend
More than cool reason ever comprehends."

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making and in receiving or comprehending an explanation, the mind, besides combining the material or information provided, is exercised in judging and reasoning about it, so as to make clear its general relations. The material or information consists partly of particulars (percepts) and partly of generals (concepts), and when we combine these so as to make clear the relation of the particular to the general we are said to explain it. The perfection of this mental process depends upon the perfection and clearness not only of percepts, but of concepts also, and of the comprehension of the relation between the percept and the concept which includes it and of the language used to express this relation. Hence, in work which is mainly concerned with the making and the comprehending of explanations, the need for constantly refreshing, rectifying, and clarifying concepts as well as percepts, and for the use of vocabulary and language which, besides being indicative of particulars and particular relations, is able to clearly express and describe generals and general relations, as, indeed, all civilized language does.

We see then—to put the matter as Prof. Lloyd Morgan does—"that in every stage of mental development observation, the apprehension of description, and the comprehension of explanation and, I would add, interpretation, should be made continually to play into each other's hands. If observation leads up to apprehension, apprehension, in return, quickens observation; if apprehension is the necessary precursor to comprehension, comprehension gives a new meaning to all that is apprehended, and a new zest to individual observation." As Sir W. Hamilton puts it—on the way from the un-unified facts of observation to unified knowledge there is a perpetual alternation of the processes of analysis and synthesis, by means of which the general ideas arrived at by the latter gradually become wider and wider and more and more abstract. As teachers, we should take care so to arrange our course of instruction as to afford frequent opportunities for the interaction of observation, apprehension, and comprehension, and not attempt to keep these three in separate successive compartments, nor endeavour to perfect one without the aid of the other two.

Information and Knowledge.

The pupil must not only observe, but also learn to describe what he observes, and to understand and appreciate the descriptions and explanations of others—in other words, he must learn the use of language. And here a caution is necessary. The pupil must not confuse information and knowledge. Knowledge is a closely related whole, all the parts of which are mutually interdependent. Information is the stuff which, in correlation with personal observation and personal generalization, contributes to the making of knowledge. If the learner desires to gain knowledge, he must submit such of his information as is derived from others to the tests of his own observation and his own generalization, and must see that in the information which he himself gathers the observations and generalizations are fresh, clear, and accurate.

Language as bearing on Thought and Memory.

But before going into this matter any further, let me consider awhile the use of language to the learner—its bearings on thought and memory. I shall not of course attempt to speak of more than a few of the chief points. Following the order of psychological developments, we have first a period of sense-impressions and sense-ideas and percepts of particular objects; and the language which accompanies these experiences is one indicative of particular sense-experiences—experiences actually present. Such attempt as there is to graphically record these experiences takes the form of pictures. Upon this closely follows the desire to communicate information and to describe. This induces attention to the relations to one another of particular objects or sense-experiences—their qualities of size, colour, action, &c. The accompanying language becomes less particular and more abstract and general in import; and the graphic record begins to find pictures too limited and ill-fitted to indicate even particular relations. The memory finds itself helped, but only to recall visual impressions. The time arrives whose predominant characteristics are perceptions of relation, analyzing, generalizing, attempts to explain and to comprehend the explanations of others. Language becomes descriptive, significant of ideas and generalizations. The graphic record exchanges pictures for written signs, written words, which stand for ideas and indicate relations; and the meanings of these words, oral or written, are learnt through association—the association of the mental state with the sound of the word and with the word's written sign. The memory finds itself able to pack its records better, and to recall ideas as well as visual images. It can do its work more quickly. But the mind finds that what it recalls, or what is newly presented by language, is not so effective, clear, and helpful to work with as, in their own particularizing way, pictures were. The statements are only partly comprehended, or not comprehended at all, unless the concepts involved in the ideas have been properly formed from the percepts in which they take their rise, and properly associated with the words or written signs which stand for them. Ideas by their very nature are generalizations; and hence the predominating tendency of language is to generalize. Even when we are describing a particular object, though the relations which we make prominent are relations of a particular *unknown* object to other particular *known* objects, the language we use is so full of *general* import that the description may be, and for adults usually is, set in a background of conceptions or generalized conceptual thought.

It is to this tendency and the liability of words and statements to bring with them many and varying associations that we must attribute the fact that even the best verbal descriptions are indefinite, indistinct, and disconnected—hard, especially for the young, to translate into accurate mental or graphic pictures. They need what is perceptual and particular, and language tends to the conceptual and general. They need to have the features presented to them simultaneously, and in their natural proportions and relations; and language, especially spoken language, presents them in succession and shadowed forth by comparisons which often bring in far more than was wanted or intended. Nevertheless, pictures are so particularizing and so limited in power to express generalizations, and things themselves present so much more than is helpful to the formation of a special single concept, that without language, oral and written, we can make no effective progress in thought—which essentially has to do with relations and generalizations, and therefore none in the acquisition of knowledge, which consists in bringing objects of consciousness into true relations with the general body of interrelated, assimilated experience.

Oral Language and Written Language.

We must now turn to the consideration of the differences between oral language and oral teaching on the one hand and written language and learning from books on the other.

To begin with, the effect of the spoken word is more transient. We cannot, as with written language, go back and ponder over the words and the statement, and, having made sure of the meaning, proceed at our own pace. If the meaning is not caught when the statement is made, we are liable to miss it altogether; and specially liable are we to miss the careful accuracy and exact limitations of the spoken statement and to trust to general impression, and the more so when its subject is not one with which we are intimately acquainted. In description, spoken language is even less able than written language to present all parts of the object simultaneously, and in their relative positions and proportions. And to some the very sound of the voice is a disturbance to thought. Moreover, it appeals to only one sense, that of hearing—a much less reliable means of information than sight, to which objects and pictures appeal—while written language derives advantage from speaking to the eye, though for the young it is apt to be weak in arousing and stimulating self-activity. On the other hand, speech is more flexible. We can change and twist and add to what we say, and say the same thing again and again—compelling renewed attention to particular points and aspects of it—in a way that would be intolerable in written language. Moreover, the look in the face, the tone, the gesture of the teacher give a meaning and an emphasis to what is said—set it in an atmosphere or on a background of emotional desire—which written words can never give. And, above all, it is only in oral teaching that we can have that constant interplay between the minds of the teacher and the learner which is the very soul and essence of true teaching. In written language one tends to think more of the subject than the learner, or to address the vague generalization of a learner—a concept which is liable to be very hazy when the learner is a child. In oral teaching one is drawn to think of the learner first and the subject second, and to adapt the subject to the learner. The spoken word, too, more readily excites curiosity and interest, and a sympathetic manner nerves the pupil to renewed effort. There is, however, always this danger, that the teacher may do all the mental activity and expression, while the child sits passive and listens. It will be seen that, to my mind, speech, through its liability to disconnectedness and rapid change of effect, its tendency to produce

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impressions somewhat fleeting, indefinite, and indistinct, and through its appealing to an organ of sense less helpful to memory than sight, is less valuable than written language for conveying information which we desire to be accurate, clear, well defined, and connected; while for working up information into knowledge—for assimilation, that is—and for stirring, stimulating, and directing feeling and effort, and producing self-activity, speech is our more valuable educational means. It is clear to me that we need both books and oral teaching (including observation and experiment); and that the place of neither can be taken by pictures, as at times some would seem to think, nor by heuristic methods solely, as others have of late set forth.

How to work up Information.

I have already stated how the learner, in my opinion, should deal with information handed on to him, orally or in writing, by others, if he would work it up into knowledge. He should acquire a clear and personal acquaintance with the material and the ideas dealt with, should apprehend and comprehend these and the words and statements used in connexion with them, so that he may realize and appreciate their meaning. Some of his information he must gather for himself, some of his concepts he must form for himself and test for himself; but it is not necessary that this should be the case with all information. Life is too short, the outfit of the individual is too incomplete, and knowledge is too vast, for it to be wise for any single learner to ignore the accumulated knowledge of the human race, to strive to tread again the zig-zag paths and blind alleys of the past, and to accept nothing but what comes to him from direct experience through his own personal observation, perception and conception, judgment and reasoning. And, if in some matters—which some day he will completely master—his percepts and concepts must for a while remain *indirect*, he may, nevertheless, be comforted by the assurance that even these indirect percepts and concepts will be of value; for they will strike the right keynote, rouse the right kind of curiosity and interest, and turn them in the right direction, and so prepare him for more personal and direct work in the gaining of knowledge when the time and opportunity for this arrive.

The Beginning should be Informal.

It seems to me that in every subject used for educational purposes the beginning should be informal; that, as far as possible, during that stage, all should be actually present which is so far needed; and that the work should be *mainly* observational and experimental and the language chiefly oral. Then gradually the subject should be more formalized; and, during this stage, when more will be wanted than can readily be present, and when we shall constantly need reflection, imagination, and conception, then it will always be wise to call in the aid of written language and of books. These characteristics will of course differ slightly with different subjects and with the ages at which they are begun.

I had intended to pass on now to consider the use of books in connexion with various particular school subjects. But, on second thoughts, I have decided to deal instead with the possible educational purposes of school libraries and class-room libraries.

School Libraries.

It can never be wise, I think, to attempt to make a school library a rival of Smith's bookstall or Mudie's Library, and still less of the London Library and the British Museum. We have, for the most part, neither money nor space for anything very large. Our choice must be guided by the actual and most pressing needs of a school—the needs of its teachers and its pupils. For my present purpose, I shall restrict myself to the needs of a *day school*—a boarding school can amend and add to my proposals. Boys and girls at day schools, and, I may add, teachers at any school, have very little leisure for light literature during term time. At school, boys and girls are in the class-room or the playground. At home, they have their lessons to do and to prepare for, and the pleasure and duties of home life to attend to. In the main, we must leave their light literature to the holidays and the home. Nor would it be well to interfere with the only duties which, as far as I can see, godfathers and godmothers are left to perform nowadays—the giving of books. Nevertheless, under the head of "romances," "novels," "tales," "poetry and plays," a few books of established excellence, and of real and lasting interest to boys and girls, may well be included in the school library. The *chief* part of the library, however, should, I think, consist of "books of reference" for the teachers and the more advanced pupils. I should not attempt much in the way of pedagogy. Books on the theory and the history of education belong rather to the period before the teacher begins to teach at all. They are the concern of the training college, educational societies, and the teacher's own private library. For each class subject, however, there might well be in the school one good book (or part of a book) on the various methods of using that subject as a means of education. We shall want an encyclopædia of moderate size and cost, a bibliography (such as Sonnenschein's "The Best Books"), dictionaries, and larger grammars, larger books on science, and a gazetteer and larger atlases and maps. These I will class as (*a*) *books of reference*, specially so called. I will give the other classes with as little comment as possible: (*b*) history and biography; (*c*) geography, travels, and commerce; (*d*) Latin and Greek literature and archæology; (*e*) French and German literature; (*f*) English literature; (*g*) a few good books on political, civic, and social economy; (*h*) natural history of animals, birds, insects, and plants, and some of the larger books on physical science and mathematics—a rather full section, comprising both books, simple, rudimentary, and popular, and more advanced books on the sciences (zoology, botany, biology, physics, &c.); and, lastly, (*i*) a few good books on music, painting, and sculpture.

I follow, in the main, the headings of such libraries in France; and I estimate that, exclusive of the romances, novels, &c., there would be, for a school of four hundred pupils (and, say, fifteen teachers), two hundred separate works as a minimum. How many volumes I cannot say—that must depend upon the editions chosen, and on the number of duplicate copies found necessary. These would be books for teachers and more advanced pupils to consult, so as to amplify and deepen their knowledge. They should not as a rule be removed from the premises. Sixty pounds would go a long way towards providing them.

Class-room Libraries.

But there are other books, of a size and scope intermediate between these and ordinary class-books—smaller encyclopædias, for instance, and, in particular, small encyclopædias or dictionaries treating separately single groups of related subjects, which teachers and pupils will need to consult more, which should be more readily at hand, and which, moreover, many classes may need at the same time. These should form the class-room library with which each class-room should be supplied, and which should bear directly on the work of the class. The class-room library should contain, besides the smaller books of reference just mentioned, larger text-books on the class subjects than those in current use—books which, as a rule, are too expensive for teachers or pupils to buy for themselves. My list, accordingly, would embrace: (*a*) a small, handy encyclopædia, or encyclopædias; (*b*) a good, and fairly large, dictionary, and a similar grammar for each of the languages dealt with—including English; (*c*) good histories, including, for England, extracts from original sources, and middle-sized histories of Europe, Rome, Greece, France, Germany, and Italy; (*d*) a small book of biographies (*e.g.*, the epitome of the "Dictionary of National Biography"); (*e*) a good, and fairly large, political and historical geography, a physiography, and a commercial geography; and (*f*), if Latin and Greek are taken, a small dictionary of classical archæology and legend; (*g*) a good edition of the English literature subject studied—if it be a play, or plays, of Shakespeare, Abbott's "Shakespearean Grammar," and a commentary or two, such as those by Gervinus and Dowden, and a good history of literature, English and foreign; and (*h*) larger text-books for mathematical subjects and for scientific information—about forty separate books in all, or thirty as a minimum.

I do not speak of class-room libraries as a mere vision of what might be in Utopia or Atlantis. When I was a head master every one of my class-rooms had its library—not quite so full as I should have liked, but full enough to be serviceable, and especially fitted out in those one or two subjects which the class master took in other classes besides his own, and which, in a measure, he made his special subjects. For I held, and always have held, that a good class master, whilst having a general knowledge of all or most of his class subjects, should have a special knowledge of one or two, and should have a personal experience of the boys in at least two other classes besides his own. With carefully planned time-tables, I found this quite possible. On the other hand, except in the cases of the most advanced pupils, the teacher of only one subject—the specialist—I generally found a difficulty, and *qua* teacher somewhat narrow, and, for school purposes, seldom as satisfactory as one who taught several subjects and could keep them in correlation and in due

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proportion. In fact, the specialist in only one subject is not wanted for pupils under the age of fifteen. But, however this may be, I did not provide him with a special library.

PUBLIC LIBRARIES.

I have no time left to speak of the uses of "Public Libraries" for educational purposes. But I think I may assume that we are all agreed that it would be a good thing to encourage, and to make it easier for, readers of serious inclination to make more use of our free libraries; which, I take it, were not intended to serve as mere caterers of novels for the lazy and dreamy-minded, but were intended to foster a somewhat nobler curiosity, a more strenuous desire to know. It may be that a "children's ticket" should be issued for children of from, say, ten to fifteen or sixteen years of age, and a special catalogue issued at a nominal price; or a "student's ticket" might be issued which would allow a *bona fide* student to have out three works (other than fiction) at a time. What has been done in Wrexham, and some few of our towns, can be done elsewhere. There seems, moreover, to be no good reason why the schoolmaster or the schoolmistress should not have his or her box of books delivered from the central library, for use in school; and why the free library should not form the school library. However this may be, the schools would be only too glad to augment the income of the library by grants and proceeds from entertainments got up by the scholars. The children would then take an interest in the library as a public institution, and the free library would be a reality and not, as it so often is, a machine for circulating fiction and a resting place for loafers.

The CHAIRMAN said that, the lecturer's subject being "Books," he had had to proclaim the virtues of books, but, in his (the speaker's) opinion, the English schoolmaster was still too far committed to the use of books. In the "Model School" at Brussels, except in literature lessons, neither master nor pupil had a book. Of the two philosophers, the one referred to by the lecturer who "would send the child out into the wilderness," and the other who said all that was necessary for the teaching of history was to turn the child loose in a big library, he thought Rousseau the nearer the truth. Socrates' famous tirade against books—dead things which could not teach him anything—was a plea for the heuristic method, about which much nonsense had been talked as a new discovery. Of course, when they reached a certain stage, they must have books, and one of the most essential functions of a teacher was to teach his pupil how to use a book. Failure to do this was apparent in his own recent experience in the inspection of schools, where in the lower forms a good deal of inability to note the right points had been noticeable, the pupils producing lamentable results from a simple English story read to them for reproduction. He did not consider an outlay of £60 on books for a school of four hundred boys a very liberal estimate. He himself would not be so particular as to the books he would admit; and he thought children could not be given too much of light literature so long as it was wholesome; and the lecturer had himself shown in an admirable compilation how novels could be worked in with history teaching. As to works on pedagogy, he would certainly, in his ideal school library, have a liberal supply of such books. The time when teachers most appreciated such books was not the time of preparation for an examination, but after they had got to know something of the real practical difficulties to be encountered, and desired to see how these difficulties had been met by others.

Mr. KING said he would be glad if the lecturer would give his opinion with regard to the new class-books which were now appearing with so many illustrations, and how they might best be used in class. There had been in the last two or three years some valuable editions of illustrated classics. He confessed he found his boys continually attending to the pictures, to the exclusion of the work set. With regard to the suggestions for a school library, he had noticed that this year the S.P.C.K. were offering their books at half price, including among them a good stock of historical novels, with the object of fostering school libraries. There was in these days of scrappy text-books in history and grammar an urgent need of some more comprehensive and complete works to which they could send their pupils for the settlement of points of difficulty.

Mr. BOWEN, in reply, said, with regard to the illustrated books referred to by Mr. King, he thought the idea as a whole was a good one, but the way in which it had been carried out was not by any means good, and in many cases the small books had been so overloaded with illustrations that the child might easily be led away from the text. What he had meant to plead for was some use of books for school purposes, not the substitution of books for oral work, and certainly not to advocate oral work to the exclusion of all other. In schools where the work was almost entirely oral he had found the results lamentable. He had meant his class-room library and school library to be educational, and had avoided swelling the number of books unduly. He was very much in earnest about school libraries and educational libraries, and was anxious not to pitch his programme too high but to state what was absolutely necessary. He would allow children to have wholesome books in any quantity, but at home, not at school. Let them not take from the home all the responsibilities of education; the home should have its share, and its share should lie in the direction of books of general knowledge. He quite agreed with the chairman that a good deal of good reading and information was to be got from tales, though he would not add to the school library an undue number of novels.

A vote of thanks to the lecturer concluded the proceedings.

REVIEWS.

THE HISTORICAL BASIS OF MODERN EUROPE.

Foundations of Modern Europe. By Emil Reich, Doctor Juris. (5s. net. George Bell.)

In this volume Dr. Reich publishes the substance of a series of twelve lectures delivered by him last year "at the request of the University of London." They form "a systematic course" in the sense of orderly arrangement, but they are rather "popular" than "academic" in treatment, and well calculated to stir an interest in the subject, which was probably their original purpose. The real study of the period is another matter.

The first lecture is concerned with the War of American Independence, though its essential connexion with the general subject is not strikingly apparent. Consoling himself for the "great difficulty" of taking "a fair view of all the factors in the war," Dr. Reich lays hold of "the just remark that, the larger, the more comprehensive, the waves of historical events, the smaller is the number of their controlling causes" (page 3). Yet we learn (page 195) that, "like all great historical facts, the unity of Germany was for generations prepared by general and vast causes embracing an infinite number of particular phenomena." However, the war was not "a matter pre-eminently of English or American history," but "in reality and *par excellence* a European, an international, event." Moreover, it was the French that were "the real victors in that great struggle." Well, we wish the French joy of their share of the spoils. It was a great achievement in 1781 for a country that in 1766 or 1767 was "no longer in a condition to either hurt or thwart the most ambitious hopes of Great Britain" (page 17). But, after all, was not the French co-operation at Yorktown the single direct and effective stroke that the French delivered? And is it not a somewhat singular historical judgment that assigns to one of the co-operating parties the honour of being "the real victors"? Dr. Reich himself is very severe upon those of us that patriotically claim that Waterloo was a British victory, although the British share of Waterloo may well compare with the French share of Yorktown. Apart from the French fleet, the European combination against Great Britain was a mere pious aspiration. As to the cause of the American revolt, Dr. Reich sneers at the notion that "the various measures of unconstitutional, or, at any rate, unwise, taxation" and alleged acts of high-handed autocracy "so exasperated the fine moral or legal fibre of the colonists as to drive them to rebellion" (page 7). "Such ethical shivers do not, as a rule, prove of long duration, unless supported by abiding considerations of material profit" (page 8). "There can be little doubt that the abiding, material, and yet, prospectively at least, also ideal cause of the deep-seated antagonism of the colonials to the British Government was caused by the fatally wrong policy of the Court of St. James's with regard to the vast *Hinterland* of the colonies" (page 9). But what policy would have been effective if "the colonials were, and had long been, but too well resolved to accept no other solution than that of a complete rupture" (page 11)? Dr. Reich, it seems to us, has still something to learn of the moral force of the Puritan character; and, if there are "inward callings given to men like Columbus, Richelieu, Napoleon, Bismarck, or to women like Jeanne d'Arc"—if such men know "that the voices are there, that they actuate, prompt, urge, and force them to do what in the end they do achieve" (page 100)—we may ask whether such voices might not have made themselves heard in the humbler bosoms of the colonists. And, if no English historian has yet got at the *vera causa* of the war by "feeling the real pulse of the time" in the "numerous legal and administrative documents in the Record Office in London," here is a fine chance for Dr. Reich to prove his theory and convict them. At the same time he will no doubt explain away the mass of evidence that fits in with the theory that he puts aside with undisguised contempt. If Dr. Reich be-

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right, he renders obsolete many pages of the seventh volume of "The Cambridge Modern History," as well as of other histories.

So with the French Revolution. "The prevailing opinion ascribes the French Revolution to the intolerable anarchy and oppression degrading the people of France under the *ancien regime*." But then "the alleged misery of the people" was "very much less severe under Louis XVI. than under Louis XV.," and very much more severe under Louis XIII., when there were no revolutions. The misery was there, however, and it had its effects. Dr. Reich might also have pointed out the increased consideration shown by the nobles to the people before the outbreak. But, unless "the prevalent opinion" be the prevalent *historical* opinion, we take no count of it, and, in any case, Mr. Archibald Weir (whose comprehensive and well considered volume furnishes the heading to this notice) nearly twenty years ago anticipated Dr. Reich's criticism. Mr. Weir wrote:

> On the whole, it appears that, manifold as were their grievances, the French peasantry had not lost all patience, as they certainly had not lost all spirit, and the initiative to their insurrection is not to be found in their hardships, though these provided ample incitement to anarchy and revenge when once resignation and habit had been disturbed from without.

What, then, was the cause—or the causes? Why, the attainment of "a most remarkable homogeneity of the people," for one thing. Dr. Reich says (page 31):

> This homogeneity, then, had caused the mental attitude of most Frenchmen to be the same—at least, with regard to certain fundamental principles of politics, philosophy, and society. This homogeneity must, we take it, be admitted as the first and indispensable condition of the great event called the French Revolution. . . . For the first time in French history the French became conscious of their unity as a people and of their strength. Once the French people became conscious of their strength, it was only too natural that they should attempt to assert their rights against the Crown.

Well, we do not think that this point has been overlooked by historians. But what next? For Frenchmen are not less homogeneous now, and there are no more revolutions on the grand scale. We find nothing explicit; and yet the causes of such an event—"undoubtedly the most important event of modern history" (page 26)—would seem worthy of very careful examination. When Dr. Reich says that "the Great Powers were determined to force a war upon France," we must ask him to except Great Britain (Appendix I. to Dr. Holland Rose's edition of Carlyle's "French Revolution," Vol. III., pages 399–401. George Bell).

Napoleon occupies four lectures. Dr. Reich does well to emphasize the "immense and lasting work" of "the incomparable Corsican" in civil reorganization, and he narrates the campaigns with verve and with instructive comment. His acrid criticisms of the futility of the British arms on land rest on a perverse misconception of the situation. Where is the historical value of such a statement as that "in all the immense struggles between England and the French from 1793 to 1815 the English were able to secure not a single decisive victory on land single-handed"? What allied troops could possibly do so! Why, did the French themselves do it even at Yorktown? Again, what nonsense is it to tell us that "the victories of Wellington in the Peninsular War have been described with all the exaggeration and 'advertisement' natural in the case of smaller nations who succeed in securing a victory over a greater nation" No wonder that Dr. Reich's audience listened to such extravagance with amusement rather than with resentment. The description of the Waterloo campaign is slurred over under cover of the contradictions in the various reports, which are said to be "so great that no ingenuity and no research can ever hope to reconcile them," and by a repetition of the comfortable theories (1) of the impotence of "the Anglo-Dutch army" without the Prussians, and (2) of the vanity and exaggeration "of all small nations" when they gain a victory "over powerful nations." We may remark, in passing, that the first example of these contradictions has been sufficiently settled by M. Houssaye, to whose work Dr. Reich himself refers elsewhere, though he has apparently missed this particular point. In the lecture on "The Re-action," which treats of part of the social movements, the most striking thing is that Gibbon's "Decline" is bracketed with Robertson's "Charles V." as a work that "now appears obsolete and past," at any rate as regards "the middle ages and early modern times." In the sketches of the unity of Italy and of Germany, we need only note an unreserved admiration of Bismarck, which seems to us to divorce morals from politics as decisively as "the genuine Prussian brutality" of Wilhelm von Humboldt at the Congress of Vienna.

The circumstances of the delivery of these lectures appear to have led Dr. Reich to propound startling views without adequate scope for the exhibition of their historical bases, and the spoken word insisted on reproduction in print. We hope that he will drastically revise the book, and bring it into accord with his just reputation for erudition and ability.

A Strenuous Life.

Autobiography. By Alexander Bain, LL.D., Professor of Logic and English in the University of Aberdeen. (14s net. Longmans.)

A most characteristic volume at all points. Dr. Bain himself brings the narrative down to 1890, and Prof. Davidson, his successor in the Chair of Logic and his literary executor, completes it in the same spirit. The work is remarkably unlike the autobiography of Bain's old friend Spencer, or of Prof. Fraser, who is still happily with us. To readers that did not know the man—and know him with some intimacy—it will probably appear somewhat dry, and even lacking in substance; but to those that knew him it will speak eloquently from every page. The writer, in fact, has imposed on his pen his habitual masterful reticence, firmly restricting himself to facts bearing upon his mental growth, the development of his works, and his personal career. Even when he records his first marriage he dismisses the fact in six words—a clause of a sentence—without mentioning his wife's name, parentage, or connexions; nor does he state his mother's name. This is not a book of gossip.

A "preparatory note of explanation" of the objects of the volume characteristically gives the first place to an acknowledgment of "indebtedness for assistance rendered in numerous forms and by many individuals in the varying exigencies of my career." If there be any incompleteness in the execution of this object, it must evidently be set down to the forgetfulness of age: the purpose is highly honourable and strictly sincere. In the matter of his books, the main acknowledgment goes to some of his more distinguished pupils, partly to others—J. S. Mill, Grote, Graham, Clark, and less known names; but any such assistance was merely in detail or casual suggestion, and in no way affected the substance of the work. Another object, of course, was the delineation of mental growth, which is probably the most interesting element of all; and this portion includes a great deal of fact and criticism on educational institutions—schools, colleges, and Universities—and involves a historic, not to say antiquarian, interest. A third object—"to cast as well as reflect lights upon my surroundings, and thereby to impart particulars regarding personages that may have an interest in the public eye"—is carried out with the author's usual discretion. At the same time, interesting glimpses of historic names very frequently are afforded: John Mill, Grote, Carlyle, Comte, Edwin Chadwick, and so forth. Then there is a consecutive view of the author's published writings, and a very detached criticism upon them, with indication of the latest positions he had taken up. Indeed, the volume grows on the reader, in spite of his occasional delay in little known, and therefore less interesting, places.

The outstanding fact is the extraordinary persistence and energy wherewith a very poor and not particularly strong boy of a mean street forced his way against exceptional odds to the Lord Rectorship of the University of his native town, and to a world-wide fame in, perhaps, the most difficult of human studies. His father was a handloom weaver with a large family in a time of failing trade; but he displayed the masterful will of his famous son in his increasing difficulties. From thirteen to eighteen, Bain himself worked at the loom—"the period of my self-education." Getting a small bursary of £10, by grace of the authorities in recognition of his promise, he eked this out by private work and struggled on, finishing his college course as best man of his year, notably in mathematics. Then came assistantships and various other engagements, among them a period of service under the Metropolitan Sanitary Commission and the General Board of Health; but the special studies, which had gradually concentrated on philosophy, were arduously maintained. How he failed to obtain professorship after professorship, and how he at length was seated in the chair he made illustrious, is a record that may be commended to aspiring merit: from the public point of view it is sufficiently melancholy. Strange also it is to read how the austerity of an earnest father and the unintellectual presentations of religion by clergymen turned a well disposed mind away into the paths of agnosticism. The simplicity and frankness of statement on all personal matters of public interest will probably be regarded as a marked charm of

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the volume. It affords a notable example of the strenuous life, and depicts a most honourable and distinguished career. There are four excellent portraits, representing Dr. Bain in 1854, 1876, 1882, and 1892, the 1882 one being from the fine University portrait painted by Sir George Reid, P.R.S.A.

The Literature of the Dark Ages.

"Periods of European Literature."—I. *The Dark Ages.* By W. P. Ker, Professor of English Literature in University College, London. (5s. net. Blackwoods.)

Though this is the first in order of the series of twelve volumes, it is all but the last to reach publication. But it was well worth waiting for: it is a most thorough piece of work—evidently the results of many years of close and wide study, presenting the outstanding matters in relief and in their literary connexions with remarkable power and freshness, and lit up throughout with a quiet but irrepressible glow of humour. It is marked by originality of treatment, and will exhibit its subject to most readers in a quite novel light—much to the advantage of the reputation of the literary workers of the period. For the present purpose, "the Dark Ages" are taken in a restricted meaning, fully justified by the author, as "the centuries of the barbarian migration, before the establishment of the Romance literatures, or the kind of civilization that is implied in them." The richest vernacular literature of the period is mainly, at all events for us, the older Teutonic poetry in the Teutonic alliterative verse. Then there is the Latin literature—Latin is the principal language of the Dark Ages—and Latin ideas and matters interpenetrate the vernacular literatures by adaptation and exposition of Latin knowledge, so that there is great scope for analysis. Further, there are Greek, Celtic, and Arabian authors that claim attention on various important grounds. The scope of the work is thus very wide, and the execution derives special value from the author's mastery of the several languages, his first-hand familiarity with the several writers, his firm command of just principles of criticism and of the most extensive area of comparison, and his unique knowledge of and delight in the sphere of Romance. After a most luminous and instructive general chapter on the "Elements," Prof. Ker handles the various literatures in order as enumerated. Among the Latin writers, the treatment of Boethius, Paul the Deacon (Warnefrid), and Luitprand may be selected as eminently sympathetic and distinctive; the popular Latin verse, which was so widely and deeply influential, is fully and acutely handled; and the educational developments—"the history of Latin is the history of education, and follows the great schools"—are carefully set forth. If it were compulsory to make a choice, one might decide that even still finer is the handling of the Germanic poetical remnants, chiefly in Icelandic and Anglo-Saxon. There is one danger to the volume, and that is its appearance in a popular series, which may lead to the wrong judgment that it is merely a popular compilation. Therefore, we insist the more upon the originality and thoroughness of the workmanship.

The Line Complex.

A Treatise on the Line Complex. By C. M. Jessop, M.A., Assistant Professor of Mathematics, Durham College of Science. (10s. net. Cambridge University Press.)

The subject of Mr. Jessop's new work is one which has hitherto occupied the attention of foreign rather than of English mathematicians, in so far at least as extensive original investigation is concerned, and it has been the object of the present author to bring within easy reach of the English student the important investigations of Continental writers in connexion with the subject. In a most interesting preface Mr. Jessop briefly sketches the past history of line geometry, recalling how the idea of taking the line as the element of space was first developed by Plücker, who, in his "Neue Geometrie des Raumes," created the notion of a complex, and who investigated in his works the leading properties of linear and quadratic complexes, establishing in the course of his research the existence of what is known as Kummer's surface. The labours of Plücker in line geometry would have been more fruitful in results if he had chosen a happier method of analysis, and it remained for Klein to introduce the more suitable and therefore more powerful mode of treatment. Klein's method is the one generally employed by Mr. Jessop throughout his work; yet he at times prefers to adopt synthetic rather than analytical processes as being better adapted for special purposes. In their turn, other Continental contributors to the subject are noticed by the writer.

With the object of aiding the student as far as possible in his work, the treatise (proper) on "The Line Complex" is preceded by an introductory discussion of those more elementary portions of synthetic geometry which bear on the main theme under consideration. The author clearly defines (1) the unrestricted line with its four independent co-ordinates; (2) the complex, or triply infinite series of lines between whose co-ordinates one equation exists; (3) the doubly infinite series forming a congruence, and obtained by imposing two conditions on the lines constituting it; and (4) the ruled surface, or singly infinite assemblage of lines between whose four co-ordinates there exist three relations. Although Mr. Jessop's work professes only to deal with the line complex and with congruences considered as the intersections of complexes, yet, for the sake of completeness and on account of the close connexion of the subject, he introduces some further chapters on congruences, including the special class so successfully treated by Kummer. It will be evident that the present author has made a very valuable contribution to the number of English mathematical treatises.

GENERAL NOTICES.

CLASSICS.

The Characters of Theophrastus. Edited by J. M. Edmonds, M.A., and G. E. V. Austen, M.A. (4s. 6d. Blackie.)

The text is practically that of the Philologische Gesellschaft of Leipzig; the notes, which are full and very instructive, are independent in tone, though the authors acknowledge a natural indebtedness to the various available sources, such as Prof. Jebb's edition and the commentaries of Casaubon and Duport; and the numerous illustrations, "all derived from ancient, if not absolutely contemporary, sources," and admirably reproduced, are most helpfully suggestive. An introduction deals elaborately with the life and times of Theophrastus, the origin and authorship of the book, the titles of the Characters, and the manuscripts. The work, though primarily intended for the sixth forms of public schools, will be welcomed by the general classical reader. It is a very painstaking edition, and it is substantially got up.

Ἡ Καινὴ Διαθήκη. (British and Foreign Bible Society.)

The Society publishes in connexion with its centenary a beautiful and valuable edition of the Greek New Testament, adopting the text of the fourth edition prepared by Prof. Eberhard Nestle, D.D., of Maulbronn, and issued by the Bible Society of Württemberg. The text is the resultant of the readings found in a majority of the three great recensions by Tischendorf, Westcott and Hort, and Weiss. The critical apparatus shows the differences between this text and the old received text on the one hand and the avowed or inferred readings of the English Revisers on the other hand. The effect is to provide a convenient conspectus of the results of modern New Testament scholarship. Parallel references are also given in sufficient amplitude on the margin. The text may be had either with or without the critical apparatus, and in various bindings (1s. 9d. to 3s. 6d.). The get-up is excellent. The edition will be widely prized.

MATHEMATICS.

Notes on Analytical Geometry. By A. Clement Jones, M.A., Ph.D. (6s. net. Clarendon Press.)

The volume presents to the fairly advanced student an interesting treatment of a lengthy series of propositions which are more or less miscellaneous in character and many of which are of great importance in the analytical development of the theory of the straight line, the conic, and the curves of the third degree. It appears likely that the student of mathematics will often be really glad to have the information at hand in its present compact form. Dr. Jones lays special stress on the value and importance of the use of the *single* variable and on the wide application of the equation of a straight line in the particular form $(x-a)/\cos\theta = (y-\beta)/\sin\theta = r$ (where the symbols have their usual interpretation). It may be noted that the substitution of these values for the ordinary Cartesian expressions for the variables in the equation to any curve is equivalent to a double transformation of co-ordinates, and yields in many cases a rigorous method of investigation. But the author hopes that his little book will do more than impart a knowledge of theory, however useful. He has tried so to arrange the text that the study of it may give to the reader an insight into the manner in which analytical research may be profitably undertaken and pursued.

An Elementary Treatise on Conic Sections. By G. Hale Puckle, M.A. (7s. 6d. Macmillan.)

Readers familiar with the earlier editions of Mr. Puckle's well known and able work will be specially interested in the new issue, which is not merely a reprint of the fifth edition, although the changes and additions are perhaps wholly confined to two chapters—the eighth, which deals with the reduction of the general equation of the second

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degree; and the twelfth, in which the leading properties of the various loci included in that equation are directly derived from it in its unreduced form. The revised treatment of these portions of the treatise is very skilful and attractive. Essentially the substance of the chapters is to be found in earlier issues, but the whole has been most carefully reconsidered and rearranged, parts have been rewritten and enlarged, and the notation has undergone great alteration and improvement.

SCIENCE.

Theoretical Organic Chemistry. By Julius B. Cohen, Ph.D., Lecturer in the Victoria University. (6s. Macmillan. Science Class Books.)

Dr. Cohen sets himself "to maintain a careful balance between theory and practice"—an object specially important in so essentially practical a subject as organic chemistry. The exposition is very clear and the experiments (161) are judiciously chosen. There is no attempt "to give anything like a complete set of methods for preparing even the more important of the substances described; on the contrary, the number has been carefully restricted to those which have a theoretical importance or practical value." Such is undoubtedly the most rewarding method. Questions at the end of each chapter are largely drawn from University B.Sc. pass papers and from papers of the South Kensington examinations. The volume is evidently the work of an accomplished practical teacher.

Elements of Physics. By Ernest J. Andrews, Instructor of Science in the Robert A. Waller High School, Chicago, and H. N. Howland, Instructor in Physics in the South Division High School, Chicago. (6s. Macmillan.)

The authors base their work "on a few fundamental principles, seeking first to clearly express these principles, and then to refer back to them phenomena subsequently considered, so as to form, from beginning to end, a series of closely associated subjects." Special attention has been devoted "to those subjects which experience has shown to be particularly difficult for the students," and prominence is given to the practical bearings of physics. The treatment is marked by simplicity and clearness. Suitable exercises (without answers) follow the several sections, and a laboratory manual of select illustrative experiments (64) is appended. There are altogether 275 figures. The book is well printed and strongly bound, and it ought to prove very serviceable.

MODERN LANGUAGES.

(1) *Recueil de Locutions Françaises, proverbiales, familières, figurées, traduites par leurs Equivalents Anglais.* Par Armand-Georges Billaudeau, ancien professeur d'Anglais. (6s. Paris: Boyveau et Chevillet.) (2) *English Colloquialisms, with their French Equivalents.* By Arthur H. Smith, M.A. (Lond.), L. ès L. (Paris). (1s. 6d. Hachette.)

(1) This is, in fact, a dictionary (450 pages, double columns) of French idioms, sayings, and proverbs, with their English equivalents—some 50,000 phrases in all. The collection is a very laborious one, and it has been carefully revised by M. Antoine, of the Birkbeck Institute. The equivalents are idiomatic, showing a wide and firm grasp of English speech. The work errs, if at all, on the side of fullness. It will be found to be an extremely useful supplement to the ordinary dictionary. (2) Mr. Smith entirely excludes proverbs and proverbial expressions, and he has avoided slang, though not hesitating to include "those popular and energetic locutions which are heard daily around us." He, too, is idiomatic: *C'est le ton qui fait la chanson.* The collection is considerable, and well fitted for the use of more advanced pupils.

Elementary Phonetics: English, French, German: Their Theory and Practical Application in the Class-room. By W. Scholle, Ph.D., and G. Smith, M.A. 2s. 6d. net. Blackie.

The authors are merciful enough to express the opinion that "the details of phonetics should never appear in the schoolroom as a subject *per se*." They give a simple description of the speech organs and their functions, indicate the mode of production and the nature of the speech sounds, and bestow considerable attention on the practical application of phonetics in the class-room. Presumably directed to the teacher, much of the book seems somewhat elementary, if not superfluous; and probably the next edition will be modified in the direction of more scientific disposition, and some blunders will get corrected. No doubt, however, there are home teachers that will find it instructive at many points, and it does service in emphasizing the importance of better attention to pronunciation.

Dutch Self-taught. By Captain C. A. Thimm. (2s. 6d., cloth. Marlborough. Self-taught Series.)

The volume follows the well known plan of the series in materials and methods, with an exceptionally full outline of the grammar. It will be very serviceable, especially to those that require but a working acquaintance with the language for purposes of business or pleasure. The serious student will have to go deeper.

Gautier. *Voyage en Italie.* Edited by de V. Payen-Payne. (3s. Cambridge University Press. Pitt Press Series.)

The introduction sketches Gautier as man, author, and traveller, with useful references for further study; and the notes are very fully explanatory, on the basis of a wide variety of authorities. A good plan of Venice is prefixed. A thoroughly good school edition of a most interesting and charmingly written work.

EDUCATION.

London at School: the Story of the School Board, 1870–1904. By Hugh B. Philpott. (6s. Fisher Unwin.)

"Is it not a wonderful story—a worthy and memorable chapter in the history of London's government—which is now coming to an end?" To Mr. Philpott's question, after his review of the proceedings of the London School Board during the past generation, there can be but one answer. Mr. Philpott, himself a Board-school boy, has entered into his subject with zest and industry, and he has narrated the progress of events in considerable fullness and with critical discretion. The first chapter pictures the position before 1870, and successive chapters deal with the many various aspects of the Board's work. The treatment is popular, and a perusal of the work will prove strikingly instructive to such as may not have an inside acquaintance with the labours of the Board or of the schools. "The London Board schools stand for much more than education," says Mr. Philpott, very justly, "and, if we confined our attention to the educational work carried on in them, we should ignore some of their most interesting and most beneficent activities." It will be good for many people to see what this means, as well as to review the purely educational work. The main danger that Mr. Philpott sees ahead is the religious question, and it is very plain that "a settlement which all creeds can accept" is a consummation devoutly to be wished. There are 40 illustrations, besides frontispiece (Lord Lawrence, first Chairman). We hope this admirable volume will be widely read and pondered.

The School Manager's Handbook, 1904–5. By Joseph King, M.A., Barrister-at-Law. (1s. 6d. Edward Arnold.)

A concise, clear, and handy guide to the multifarious and important duties of managers of schools, with appendixes containing the Education Act, 1902, the Education (London) Act, 1903, pertinent extracts from other statutes, and a variety of other matters useful for reference.

Register of Teachers for Secondary Schools: being the List of Teachers Registered in Column B of the Teachers' Register. Compiled from Official Records by the Editor of the *Schoolmasters Yearbook and Directory.* (2s. net. Swan Sonnenschein.)

This enterprising publication is very welcome. The information, though cast in a more convenient form, is in all essentials the information of the Register itself. It is complete to March 31 of the present year. The Regulations for Registration are reproduced, and there is an instructive introductory note on the general subject. The volume is nicely got up and is sure to be very useful.

L'Education en Suisse: Annuaire des Universités, Ecoles, Pensionnats, &c. (Ch. Eggimann & Cie., Genève.)

If some 2,800 students from foreign parts attend the Swiss Universities and the Zurich Polytechnikum, to say nothing of the foreign population of the schools, this new annual ought to find a very wide field of usefulness. The stress has been laid upon the more important institutions, literary, scientific, and practical, the minor ones receiving mere mention or little more. M. Albert Gobat gives a brief sketch of "L'Education en Suisse," and then the educational resources of the 22 cantons are displayed in order, with a profusion of illustrations. Some guide-book information is also thrown in here and there. Experience will, no doubt, lead to considerable expansion of the main subjects, as well as to minor excisions. Still, the book makes a promising first appearance, and is sure to be useful as it is interesting. The get-up is handy and agreeable.

The Local Education Authorities appear to be labouring laudably to get their local institutions into good trim. The West Riding County Council *Report on Secondary Schools and Pupil-Teacher Centres (Existing Conditions)* and the *First Annual Report* of the Wimbledon Education Committee are excellent examples of spirited and energetic work.

ECONOMICS.

Some Economic Aspects of British Rule in India. By G. Subramania Iyer, B.A., Editor of *Swadesamitran* and of *United India.* (The Swadesamitran Press, Madras).

Readers of *United India*—and it would be well that this ably conducted paper should be more widely read in this country—will be tolerably familiar with the contentions of Mr. Subramania Iyer. We need not take too literally his admission that "there is no pretence to originality or scientific treatment"; but what is of much more importance is that most of his views "are those that are held by his educated countrymen in general." In twenty-two chapters he ranges over the length and breadth of the economic subjects that have recently been more to the front; and he writes with large knowledge and intense earnestness, and in an easy style. Generally, the work is instructive and suggestive. But when Mr. Subramania Iyer says: "to preserve the food grains and raw materials that she produces for

(*Continued on page* 310.)

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consumption in her own domestic markets by taxing their export, and to prevent the import of competitive manufactures by protective duties in view of the growth of indigenous industries—this is the policy that alone will save India"—then one naturally wishes to know how this great result is to be achieved by breaking the back of the rayats and letting native manufacturers go slack. This matter wants deeper consideration, together with the possibilities that lie in native education and enterprise.

The Citizens' National Union, "an Old Age Pension Scheme revised and brought into line with the Fiscal Question of To-day," by John Tullis (6d., Simpkin, Marshall, & Co.), though but a slight pamphlet, is a weightier contribution to the discussion of a pressing national question than many a more pretentious publication. Mr. Tullis is a large manufacturer in the East-end of Glasgow, with broad sympathy for the victims of industrial exigencies and of the poor laws, which has urged him to formulate a remedial scheme in outline. He would be better advised, however, not to involve himself with infractions of the principle of free trade. He is himself a free trader, but does not realize the force of the thin end of the wedge, and assumes that foreign goods, though taxed as proposed, would still be sent here in undiminished quantity. Like most other critics, he confines his outlook to the finding of money: why does he not look to the other side of the account—extravagant expenditure and policy? The general result is to impress a doubt whether the project is practicable except by instalments. But the suggestions are eminently worth consideration.

Mr. John Shanks deals with *Some Neglected Aspects of the Fiscal Question* (Glasgow: Bryce). He wants to "get rid of all restrictions on labour, trades-union or other"; he wants still more urgently "the introduction of proper commercial organization, of proper work-shop systems and methods, and of a proper understanding and thorough co-operation between employers and employees, as well as the adoption of economical power, production, and up-to-date labour-saving machinery and appliances."

MISCELLANEOUS.

The Care of Destitute, Neglected, and Delinquent Children. By Homer Folks. (Macmillan.)

Mr. Folks, who is now Commissioner of Public Charities of the City of New York, has passed through a large and varied experience of the working of charitable organizations in the United States, which eminently qualifies him to describe "the historical evolution through which the charities of the country have passed." The present small volume is one of a series intended to bring the known facts of the dispensation of charity in the past to bear upon the practical problems of the present and the future. It is "limited to the consideration of the case of children who have been removed from their earlier environment and from parental control, and the direction of whose lives and the burden of whose support has been directly assumed or provided for by public authorities or private charity." Mr. Folks excludes "movements that are primarily educational, such as day schools, kindergartens, and home libraries." These will, no doubt, find their place in another volume. The book seems to have been compiled with much care, and opinions are weighed with calm judgment. Those of us that are engaged with similar problems here may find instructive analogies in it.

"The Start in Life Series," edited by J. E. Hodder Williams (3s. 6d. each, Hodder & Stoughton), is attractive in form, and promises to be very helpful. (1) *The Guide to the Legal Profession*, by "A Lawyer," presents with great judgment all the preliminary information necessary for a man that means to be a barrister or a solicitor. The treatment of the inscrutable question of prospects is evidently based on close observation and experience; and all practical details are intelligently supplied in clear order and in agreeable style. (2) *The Guide to the Civil Service*, by John Gibson, M.A., furnishes "an interesting and yet a detailed and adequate account of the principal appointments in the various departments of the Home Civil Service," and indicates how to go about obtaining such a post. The principal appointments connected with the various British (not foreign) Government offices, and obtained through examination, whether the functions be discharged at home or abroad, are also briefly treated. The general observations are thoughtful and practical; the details of appointments (age, examination, salaries, &c., are fully given; and typical examination papers and questions are supplied. The work has been very competently executed. (3) Mr. Arthur Lawrence, who is responsible for *The Guide to Journalism*, has all the benefit of the benison of Dr. Robertson Nicoll, and of the collaboration of Sir Alfred C. Harmsworth, who contributes a chapter on "The Making of a Newspaper." The neophyte will not be suddenly called upon to "make a newspaper," but incidental remarks of Sir Alfred's may be useful to him. Mr. Lawrence's personal experience, being fortunate, prevents him from being depressed by the lessons of Fleet Street in the past ten or twenty years. However, the hopefulness of youth discounts difficulties; and it is enough that the book is fluently written from a point of view of some experience, with contributions from specialists on special departments.

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MATHEMATICS.

9388. (Professor Nash, M.A.)—Show that (1) the foci of the conic $la^2+m\beta^2+n\gamma^2=0$ are given by the equations $la\mathrm{A}=m\beta\mathrm{B}=n\gamma\mathrm{C}$, where $\mathrm{A}=\beta\gamma+\alpha(\beta\cos\mathrm{B}+\gamma\cos\mathrm{C}-\alpha\cos\mathrm{A})$, ...; and hence (2), if the conic touch four fixed straight lines, the locus of the foci is a circular cubic passing through the six vertices of the quadrilateral formed by the lines and also through the feet of the perpendiculars of the harmonic triangle of the quadrilateral; and (3), if the conic pass through four fixed points, the locus of the foci is a bicircular sextic having double points at the vertices (acnodes) and at the feet of the perpendiculars (crunodes) of the harmonic triangle of the quadrangle.

[The foci can, of course, be obtained as the intersections of two conics, instead of two circular cubics, but apparently not in a symmetrical form.]

Solutions (I.) *by* H. Bateman, B.A.; (II.) *by* A. M. Nesbitt, M.A., *and* Professor Sanjána, M.A.

(1) Let (α,β,γ), (α',β',γ') be the foci; the tangential equation of the conic is

$$(\lambda\alpha+\mu\beta+\nu\gamma)(\lambda\alpha'+\mu\beta'+\nu\gamma')+k\{\lambda^2+\mu^2+\nu^2-2\mu\nu\cos\mathrm{A}-2\nu\lambda\cos\mathrm{B}-2\nu\lambda\cos\mathrm{C}\}=0.$$

If this is of the form $\lambda^2/l+\mu^2/m+\nu^2/n=0$,

$$\frac{\beta\gamma'+\beta'\gamma}{\cos\mathrm{A}}+\frac{\gamma\alpha'+\gamma'\alpha}{\cos\mathrm{C}}=\frac{\alpha\beta'+\alpha'\beta}{\cos\mathrm{C}}=2k=\frac{u\{\beta\gamma'+\beta'\gamma\}+v\{\gamma\alpha'+\gamma'\alpha\}+w\{\alpha\beta'+\alpha'\beta\}}{u\cos\mathrm{A}+v\cos\mathrm{B}+w\cos\mathrm{C}};$$

i.e., the foci are conjugate points with regard to any rectangular hyperbola circumscribing the triangle, *i.e.*, they are isogonal conjugate points with regard to the pedal triangle (this can also be easily proved geometrically).

Let $\alpha=(g+h)\sec\mathrm{A}$, $\beta=(h+f)\sec\mathrm{B}$, ...;

then $\alpha'=(1/g+1/h)\sec\mathrm{A}$, $\beta'=(1/h+1/f)\sec\mathrm{B}$, ...;

therefore

$$2k=\{[(g+h)(h+f)(f+g)]/fgh\}\sec\mathrm{A}\sec\mathrm{B}\sec\mathrm{C};$$

therefore the tangential equation of the conic is

$$\lambda^2\{2f(g+h)^2\sec^2\mathrm{A}+(g+h)(h+f)(f+g)\sec\mathrm{A}\sec\mathrm{B}\sec\mathrm{C}\}+\ldots$$

or

$$\lambda^2\{a^2(\beta\cos\mathrm{B}+\gamma\cos\mathrm{C}-\alpha\cos\mathrm{A})+a\beta\gamma\}+\ldots;$$

therefore $la\mathrm{A}=m\beta\mathrm{B}=n\gamma\mathrm{C}$.

(2) If the conic touch four fixed lines, we have $\lambda^2/l+\mu^2/m+\nu^2/n=0$; therefore the locus of the foci is the cubic

$$\lambda^2\{a^2(\beta\cos\mathrm{B}+\gamma\cos\mathrm{C}-\alpha\cos\mathrm{A})+a\beta\gamma\}+\ldots.$$

The cubic must be its own isogonal transformation with regard to the pedal triangle; therefore it passes through the angular points of this triangle. Also the circular points are the imaginary foci of a parabola touching the four lines; therefore it is a circular cubic. The other six points are obviously on the cubic.

(3) If the conic passes through the four points $\pm f$, $\pm g$, $\pm h$, we have $lf^2+\ldots+mg^2+nh^2=0$; therefore the locus of the foci is the sextic; therefore

$$f^2/[a^2(\beta\cos\mathrm{B}+\gamma\cos\mathrm{C}+\alpha\cos\mathrm{A})+a\beta\gamma]+\ldots=0.$$

In order that this sextic should be its own isogonal transformation with regard to the pedal triangle it is necessary that it should have double points at the corners of this triangle. The sextic also has double points at the corners of the triangle of reference; for the equation is of the form

$$a^2\mathrm{P}+a\beta\gamma\mathrm{Q}+\beta^2\gamma^2\mathrm{R}=0.$$

If ρ_1, ρ_2, ρ_3, ρ_4 be the distances of the focus from the four points; (x_1,y_1), (x_2,y_2), (x_3,y_3), (x_4,y_4), their co-ordinates referred to fixed axes, we have

$$\rho_1=\mathrm{P}x_1+\mathrm{Q}y_1+\mathrm{R},\quad \rho_2=\mathrm{P}x_2+\mathrm{Q}y_2+\mathrm{R},$$
$$\rho_3=\mathrm{P}x_3+\mathrm{Q}y_3+\mathrm{R},\quad \rho_4=\mathrm{P}x_4+\mathrm{Q}y_4+\mathrm{R};$$

therefore, eliminating P, Q, R, we have an equation of the form

$$\mathrm{A}\rho_1+\mathrm{B}\rho_2+\mathrm{C}\rho_3+\mathrm{D}\rho_4=0.$$

This represents a bicircular sextic having the four points as double foci.

If the four points are concyclic, the sextic breaks up into two cubics. In this case the axes of all conics through the four points are in fixed directions: accordingly, if we take the axes of reference parallel to them, we have either of the systems

$$\rho_1=ex_1+c,\quad \rho_2=ex_2+c,\quad \rho_3=ex_3+c,\quad \rho_4=ex_4+c;$$
$$\rho_1=e'y_1+\tfrac{1}{c},\quad \rho_2=e'y_2+d,\quad \rho_3=e'y_3+d,\quad \rho_4=e'y_4+d;$$

therefore $\rho_1(x_2-x_3)+\rho_2(x_3-x_1)+\rho_3(x_1-x_2)=0$, and similar equations. Therefore in this case the locus consists of the two circular cubics having the four points as foci. [Rest in *Reprint*.]

15457. (Rev. T. Roach, M.A.)—Show that, if the difference of two angles of a triangle is $\frac{1}{2}\pi$, the centre of the nine-point circle lies on the side adjacent to the two angles.

[Solutions far too numerous to allow of more than a few being published.—Editor.]

Solutions (I.) *by* R. Tucker, M.A.; (II.) *by* Rev. W. Anderson, M.A.; (III.) *by* S. C. Bagchi, B.A.

(I.) Let O and H be the circum-centre and orthocentre; therefore

$$\mathrm{AH}=a\cot\mathrm{A}=2\mathrm{O}\alpha,$$

where α is mid-point of BC; but

$$a\cot\mathrm{A}=a\tan 2\mathrm{B}=2b\sin\mathrm{A}\cos\mathrm{B}/\cos 2\mathrm{B}=2b\cos\mathrm{B}=2b\sin\mathrm{C}=2\mathrm{AD};$$

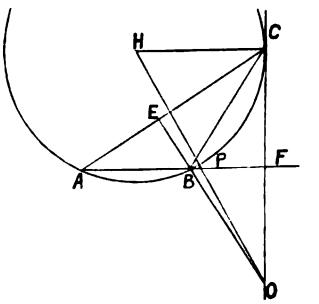
hence N lies on BD.

(II.) $\mathrm{ABC}=\frac{1}{2}\pi+\mathrm{BAC}$. H is centre of circum-circle. The perpendiculars CF and BE intersect at O. The angles OBF and CBF are each $90°-\mathrm{A}$; therefore

$$\mathrm{CF}=\mathrm{FO}.$$

$$\mathrm{BCF}=\mathrm{A};$$

therefore CF is the tangent to the circum-circle, and HC is parallel to AF; therefore the mid-point of OH, or nine-point centre of ABC, lies on AB.



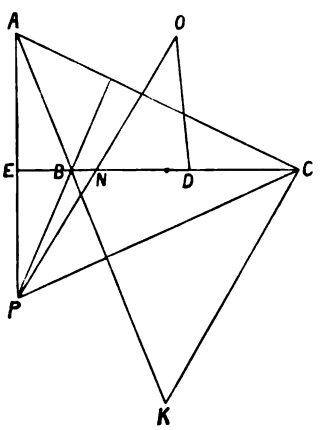
(III.) Let B > C. Draw CK perpendicular to AC to meet AB produced at K. Let P be the orthocentre, O the circum-centre. Join PO to cut BC in N. Then N will be the nine-point centre. Now $\mathrm{B}=90°+\mathrm{C}$; therefore

$$\angle\mathrm{CBK}=\angle\mathrm{BCK}=90°-\mathrm{C}.$$

But CP is perpendicular to AK; therefore

$$\angle\mathrm{BCP}=\mathrm{C}=\angle\mathrm{ACB}.$$

Also AP is perpendicular to BC produced; therefore E is the mid-point of AP. Since P is the orthocentre and O the circum-centre, therefore $\mathrm{AP}=2\mathrm{OD}$, where D is the mid-point of BC (by a well known relation between circum- and ortho-centres). But $\mathrm{AP}=2\mathrm{PE}$ (proved); therefore $\mathrm{OD}=\mathrm{PE}$, *i.e.*, $\triangle\mathrm{ODN}\equiv\triangle\mathrm{PEN}$; therefore $\mathrm{PN}=\mathrm{NO}$; therefore N is the nine-point centre (by a known theorem).



10772. (G. H. Bryan, M.A.)—A liquid film is supported on a framework in the form of an equilateral triangle of side a. If the difference of pressures (p) on the two sides of the film is so small that the surface of the film is nearly plane, prove that its equation may be written $z=\frac{4}{3}a^2(p/\mathrm{T})\,\xi\eta\zeta$, where z is the perpendicular distance of any point from the plane of the triangle, ξ, η, ζ the *areal* co-ordinates of the foot of this perpendicular, and T the surface tension.

Solution by Professor A. Anderson, M.A., LL.D.

It is easy to see that, since ξ, η, ζ vanish at the sides of the triangle, the equation of the surface of the film when z is small is of the form $z=m\xi\eta\zeta$, where m is a small linear magnitude. It is further evident, by symmetry, that, at the centre of the triangle, the surface is spherical. Hence $p/\mathrm{T}=2/\rho$, where ρ is the radius of this surface.

Let O be the centre of the triangle, and P a point near O on the perpendicular from one of the vertices, and let $\mathrm{OP}=s$. Then, for O, $z=\frac{1}{27}m$; and, for P, since $\xi=\frac{1}{3}-2s/a\sqrt{3}$, $\eta=\frac{1}{3}+s/a\sqrt{3}$, $\zeta=\frac{1}{3}+s/a\sqrt{3}$, the value of z is $m(\frac{1}{27}-s^2/3a^2)=z'$, say; therefore $z-z'=ms^2/3a^2$. But $2\rho(z-z')=s^2$; therefore $2/\rho=4m/3a^2$; and therefore $p/\mathrm{T}=4m/3a^2$. Hence the equation of the surface is $z=\frac{3}{4}a^2(p/\mathrm{T})\,\xi\eta\zeta$.

15491. (L. Isserlis.)—On a circle centre O are taken points p, q, r such that the arcs pq, qr are equal. Lines $p\mathrm{P}$, $q\mathrm{Q}$, $r\mathrm{R}$ are drawn parallel to a common tangent of the circle and a concentric conic meeting the latter in P, Q, R. Show that the tangent at Q to the conic is parallel to PR.

Solution by the Proposer *and* C. M. Ross.

Take the common tangent and the normal to the conic at the point of contact for axes, so that the equation of the conic may be written $ax^2+2hxy+by^2=2y$. Let θ be the angle which Op makes with the axis of y; then the co-ordinates of P are

$$x=1/c^2(c\sin\theta+h\cos\theta-h),\quad y=a/c^2(1-\cos\theta),$$

where

$$c^2=ab-h^2.$$

If ϕ is the corresponding angle for r, the m of PR is

$$\frac{a(\cos\phi-\cos\theta)}{c(\sin\theta-\sin\phi)+h(\cos\theta-\cos\phi)}=\frac{a\sin\frac{1}{2}(\phi+\theta)}{c\cos\frac{1}{2}(\phi+\theta)-h\sin\frac{1}{2}(\phi+\theta)},$$

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which is the same as the m of the tangent at the point Q, since the θ of Q is $\frac{1}{2}(\phi+\theta)$. Hence PR is parallel to the tangent at Q.

15483. (Profsssor SANJÁNA, M.A.)—Find in positive integers all the solutions of $13k+21l+29m+37n=300$.

Solutions (I.) *by* JAMES BLAIKIE, M.A., *and* FRANK PORTER, M.A.; (II.) *by* Lt.-Col. ALLAN CUNNINGHAM, R.E., *and others.*

(I.) Since the coefficients of k, l, m, n are in arithmetic progression, it follows that, if a, b, c, d form one set of solutions, then other sets of solutions may be obtained in the following forms:—

$$a\pm r,\ b\mp r,\ c\mp r,\ d\pm r,\ \ldots\ \ldots\ldots(1),\quad a+r,\ b-2r,\ c+r,\ d,\ \ldots\ \ldots\ldots(2),$$
$$a,\ b+r,\ c-2r,\ d+r,\ \ldots\ \ldots\ldots(3),$$

where r is any integer so long as all the expressions are positive.

The equation may be written in the form

$$13(k+l+m+n)+8(l+2m+3n)=300.$$

Let $k+l+m+n=4x$, $l+2m+3n=y$, where it is evident that $12x>y$. We have now the equation $13x+2y=75$ to be solved in integers. It is evident that x is odd. If $x=1$, $y=31$, which is greater than $12x$, and therefore inapplicable. If $x=3$, $y=18$; and, if $x=5$, $y=5$. Taking the first of these, we get $k+l+m+n=12$, $l+2m+3n=18$, of which $k=l=m=n=3$ is clearly a solution.

Applying (1), we get the solutions 0, 6, 6, 0; 1, 5, 5, 1; 2, 4, 4, 2; 3, 3, 3, 3; 4, 2, 2, 4; 5, 1, 1, 5; 6, 0, 0, 6.

Applying (2), we also get 1, 4, 7, 0; 2, 2, 8, 0; 3, 0, 9, 0; 2, 3, 6, 1; 3, 1, 7, 1; 3, 2, 5, 2; 4, 0, 6, 2; 4, 1, 4, 3; 5, 0, 3, 4.

Applying (3), we obtain the same sets of numbers in inverted order, viz.:—0, 7, 4, 1, ... There are thus twenty-five sets of solutions when $x=3$. When $x=5$, we obtain $k+l+m+n=20$, $l+2m+3n=5$, from which we deduce $k-m-2n=15$, and one solution is clearly $k=15$, $l=5$, $m=0$, $n=0$.

Applying (2) and (3), we get 15, 5, 0, 0; 16, 3, 1, 0; 17, 1, 2, 0; 17, 2, 0, 1; 18, 0, 1, 1. There are thus thirty sets of solutions.

(II.) The equation may be written $13k+21l=300-29m-37n$. Numerical values 0, 1, 2, ..., may be assigned to each of m, n, thus yielding a series of equations $13k+21l=$ a given number, containing only two unknowns (k, l), which may be easily solved. There appear to be 30 different solutions, as below. It will be seen that $k+l+m+n=20$ or 12.

$k=$	15, 3, 6, ., .	., 18, 17	., 4 5, 2	4	16, 17
$l=$	5, ., ., 6, 9	7, ., 2	8, . ., 6	3	3, 1
$m=$	., 9, ., 6, .	4, 1, .	2, 6 3, .	.	1, 2
$n=$	., ., 6, ., 3	1, 1, 1	2, 2 4, 4	5	., .

$k=$	1, 2	1, 2, 3	1, 2, 3	1, 2, 3, 4	3, 4	5
$l=$	4, 2	5, 3, 1	6, 4, 2	7, 5, 3, 1	4, 2	1
$m=$	7, 8	5, 6, 7	3, 4, 5	1, 2, 3, 4	1, 2	1
$n=$	., .	1, 1, 1	2, 2, 2	3, 3, 3, 3	4, 4	5

15496. (R. F. DAVIS, M.A.)—Prove that

$$\sin\theta=2\sin\tfrac{1}{2}\theta-(2\sin\tfrac{1}{2}\theta\,2\sin\tfrac{1}{4}\theta\,2\sin\tfrac{1}{8}\theta)+(2\sin\tfrac{1}{2}\theta\ldots2\sin\tfrac{1}{32}\theta)-\ldots\text{ ad inf.}$$

Solutions (I.) *by* Rev. T. WIGGINS, B.A.; (II.) *by* R. F. WHITEHEAD, B.A., C. M. ROSS, *and* KELA DEVA RAU.

(I.) Call the terms of the dexter u_1, u_2, ...

$$\sin\theta=2\sin\tfrac{1}{2}\theta\,(1-2\sin^2\tfrac{1}{4}\theta)=u_1-u_2\,(\cos\tfrac{1}{8}\theta)=u_1-u_2+u_2\,2\sin^2\tfrac{1}{16}\theta$$
$$=u_1-u_2+u_2\,2\sin\tfrac{1}{16}\theta\,2\sin\tfrac{1}{32}\theta\cos\tfrac{1}{32}\theta=u_1-u_2+u_3\,(1-2\sin^2\tfrac{1}{64}\theta);$$

therefore $$\sin\theta=u_1-u_2+u_3-u_4+\ldots.$$

(II.) $$\sin\theta=2\sin\tfrac{1}{2}\theta\cos\tfrac{1}{2}\theta=2\sin\tfrac{1}{2}\theta\,(1-2\sin^2\tfrac{1}{4}\theta)$$
$$=2\sin\tfrac{1}{2}\theta-2^3\sin\tfrac{1}{2}\theta\sin\tfrac{1}{4}\theta\sin\tfrac{1}{8}\theta\cos\tfrac{1}{8}\theta$$
$$=2\sin\tfrac{1}{2}\theta-2^3\sin\tfrac{1}{2}\theta\sin\tfrac{1}{4}\theta\sin\tfrac{1}{8}\theta\,(1-2\sin^2\tfrac{1}{16}\theta)$$
$$=2\sin\tfrac{1}{2}\theta-2^3\sin\tfrac{1}{2}\theta\sin\tfrac{1}{4}\theta\sin\tfrac{1}{8}\theta$$
$$+2^5\sin\tfrac{1}{2}\theta\sin\tfrac{1}{4}\theta\sin\tfrac{1}{8}\theta\sin\tfrac{1}{16}\theta\sin\tfrac{1}{32}\theta-\ldots.$$

15541. (Rev. T. ROACH, M.A.)—Sum the series

(1) $\frac{1}{1.2}-\frac{1}{5.6}+\frac{1}{9.10}-\ldots$, (2) $\frac{1}{2}-\frac{2}{5}+\frac{3}{8}-\frac{4}{11}+\ldots$.

Solutions (I.) *by* Professor HUDSON, M.A.; (II.) *by* Professor SANJÁNA, M.A., *and* C. M. ROSS.

(I.) (1) Write S for the sum; then

$$S=1-\frac{1}{2}-\frac{1}{5}+\frac{1}{6}+\frac{1}{9}-\frac{1}{10}-\ldots;$$

therefore $$4S=\frac{1}{\sqrt{i}}\log\frac{1+\sqrt{i}}{1-\sqrt{i}}+\frac{1}{\sqrt{(-i)}}\log\frac{1+\sqrt{(-i)}}{1-\sqrt{(-i)}}+i\log\frac{1+i}{1-i}.$$

Expressing this free from i, we obtain

$$S=\tfrac{1}{8}[2\sqrt{2}\log(\sqrt{2}+1)+\pi(\sqrt{2}-1)]=\cdot4742,\text{ approximately.}$$

(2) Write S for the series, and suppose that the number of terms is even; then $$3S=\frac{1}{2}-\frac{1}{5}+\frac{1}{8}-\frac{1}{11}+\ldots$$

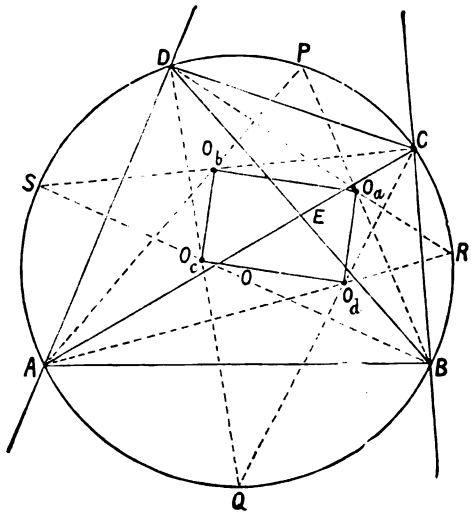
$$=-\frac{1}{3}[\log(1+1)+\omega\log(1+\omega)+\omega^2\log(1+\omega^2)].$$

Expressing this free from ω, we obtain

$$S=\tfrac{1}{27}(\pi\sqrt{3}-\log 8)=\cdot1245,\text{ approximately.}$$

If the number of terms is odd, add ·3333... to this. [Rest in *Reprint.*]

15115. (R. TUCKER, M.A.)—ABCD is a cyclic quadrilateral; (O_a, r_a), (O_b, r_b), (O_c, r_c), $O_d, r_d)$ are the in-centres and the in-radii of the tri-



angles BCD, CDA, DAB, ABC respectively. Prove that $O_aO_bO_cO_d$ is a rectangle and $r_a+r_c=r_b+r_d$. Find also $\Sigma(OO_a^2)$ where O is the circum-centre.

Solutions (I.) *by* J. H. TAYLOR, M.A., *and* J. BLAIKIE, M.A.; (II.) *by the* PROPOSER *and others.*

(I.) Let the angles subtended by AB, BC, CD, DA at C, D, A, B respectively be 2α, 2β, 2γ, 2δ. Let Q, R, P, S be the middle points of the arcs AB, BC, CD, DA respectively. Then

$$\angle CDO_b=\alpha+\beta,\quad \angle PDO_b=\angle PDC+\angle CDO_b=\alpha+\beta+\gamma,$$
$$\angle DPO_b=\angle DBA=2\delta;\quad\text{therefore}\quad \angle PO_bD=\angle PDO_b;$$

therefore $$PO_b=PD=PC=PO_a.$$

Hence PQ bisects O_aO_b at right angles; therefore also QP bisects O_cO_d at right angles, and SR bisects O_cO_b and O_aO_d at right angles.

$$\angle SPQ=\angle SCQ=\alpha+\delta,\quad \angle PSR=\angle PAR=\gamma+\beta;$$

therefore PQ, SR intersect at right angles. Hence

$$O_aO_bO_cO_d\text{ is a rectangle}\ \ldots\ldots\ldots\ldots(1).$$

$\angle PAC=\gamma=\angle PBD$; therefore the parallels to AC and DB through O_b, O_a intersect, in p, on PQ. Hence $sprq$ is a rhombus, and its area

$$=(r_a+r_c)\,pr=(r_b+r_d)\,pq;$$

therefore $$r_a+r_c=r_b+r_d\ \ldots\ldots\ldots\ldots(2).$$

By a well known trigonometrical formula, in the triangle CDB, $OO_a^2=R^2-2Rr_a$; therefore

$$\Sigma(OO_a^2)=4R^2-4R(r_a+r_c)\ \ldots\ldots\ldots\ldots(3).$$

(II.) Since AO_cO_dB is cyclic, therefore $\angle AO_cO_d=\pi-\frac{1}{2}ABC$. Also $\angle AO_cO_b=\pi-\frac{1}{2}ADC$; therefore $\angle O_bO_cO_d=2\pi-(2\pi-\frac{1}{2}\pi)=\frac{1}{2}\pi$; therefore, &c. Let $\angle ADB=\theta$, $\angle BDC=\theta$, $\angle ABD=\phi$, $\angle DBC=\phi$; then $r_a=4R\sin\frac{1}{2}\phi'\sin\frac{1}{2}\theta'\sin\frac{1}{2}BCD$, $r_a=4R\sin\frac{1}{2}\theta\sin\frac{1}{2}\phi\cos\frac{1}{2}BCD$; whence $$r_a+r_c=R(\cos\theta+\cos\phi+\cos\theta'+\cos\phi'-2)=r_b+r_d;$$

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whence $\Sigma(OO_n)^2 = 4R^2[3-(\cos\theta+\cos\phi+\cos\theta'+\cos\phi')]$
$= 4R^2[3-(\cos\theta+\cos\phi'+\cos E')-(\cos\theta'+\cos\phi+\cos E)]$.

14754. (Rev. J. Cullen.)—Prove that the six sides of Tucker's triangles touch a conic the locus of whose centre is a cubic passing through the symmedian point and the centroid, having a double point where it cuts Euler's line again, and touching the S-point axis at the centroid.

Solution by G. N. Bates, M.A.

The co-ordinates of the angular points of D'E'F' with respect to FDE are
$D' -\sin\theta\sin(A-\theta)$, $\sin\theta\sin(B+\theta)$, $\sin(A-\theta)\sin(B+\theta)$;
$E' \sin(B-\theta)\sin(C+\theta)$, $-\sin\theta\sin(B-\theta)$, $\sin C\sin(C+\theta)$;
$F' \sin\theta\sin(A+\theta)$, $\sin(C-\theta)\sin(A+\theta)$, $-\sin\theta\sin(C-\theta)$.
The conic touching the six lines is
$$\sqrt{[a^2\sin(B+\theta)\sin(C-\theta)\,\alpha]}+\sqrt{[b^2\sin(C+\theta)\sin(A-\theta)\,\beta]}+\sqrt{[c^2\sin(A+\theta)\sin(B-\theta)\,\gamma]}=0.$$
The "α" co-ordinate of its centre is proportional to
$$bc[c\sin(A+\theta)\sin(B-\theta)+b\sin(C+\theta)\sin(A-\theta)]$$
or $4R\sin B\sin C+(b\cos C-c\cos B)\,t-2R\cos A\,.\,t^2\ (t=\tan\theta)$.
The "α" co-ordinate of the centre referred to ABC is, in terms of the old co-ordinates, $\alpha+[(a\cos B+\gamma)/\sin B]\,t$; therefore the locus of the centre is found by eliminating between
$$\alpha/[4R\sin B\sin C+3at+4R(\cos B\cos C-\cos A)\,t^2-at^3]=\ldots=\ldots.$$
The locus is thus a cubic passing through G ($t=0$), K ($t=\infty$), having a double point on the line OH ($t=\pm\sqrt{3}$), while its tangent at G is $\Sigma a(b^2-c^2)\,\alpha=0$ or GK.

9537. (Professor Plamenewski, M.A.)—The rate of interest increases gradually, the rate of increase at any time varying as the rate of interest. Interest being paid every instant, the principal and the rate of interest are both doubled in p years. Find the initial rate per cent. per annum.

Solution by Clement V. Durell.

Let r = rate of interest on £1 at time t (unit = 1 year),
k = constant of variation, P = principal at time t.
$dr/dt = kr$; therefore $r = Ae^{kt}$. If r_0 = initial rate of interest, *i.e.*, at time $t=0$, $r_0 = A$; therefore $r = r_0e^{kt}$; also $dP = Prdt$; therefore $dP/P = r_0e^{kt}dt$; therefore $\log P = r_0e^{kt}/k + B$. If P_0 = principal at time $t=0$, $\log P/P_0 = r_0(e^{kt}-1)/k$: but $r = 2r_0$ and $P = 2P_0$, when $t=p$; therefore $e^{kp}=2$ and $r_0(e^{kp}-1)/k = \log 2$; therefore $k = \log 2/p$; therefore $r_0 = (\log 2)^2/p$; therefore initial rate of interest per cent. per annum $= 100(\log 2)^2/p$.

QUESTIONS FOR SOLUTION.

15587. (A. R. Richardson.)—$\phi(x)$ is a continuous function of x. When does $\int_a^b f(x)\,\phi(x)\,dx$ exist either as a proper or as an improper integral?

15588. (H. MacColl, B.A.)—What is the chance that xy is greater than 5: firstly, on the assumption that x and y are each taken at random between 1 and 5; secondly, on the assumption that x is taken at random between 1 and 5, and then y at random between 1 and x?

15589. (R. Chartres.)—Express $m^n/(mr-1)$ as a radix fraction in scale r.

15590. (Robert W. D. Christie.)—(1) Solve generally in terms of a, n the equation $X^2-pY^2=-1$, when $p=(2na\pm1)^2+(2n)^2$ [a, n, arbitrary] = form $nm+1$. (2) Extend the theorem to all primes of form $4m-1$; and (3) give the general value of $\pm r^m$ where r is a prime root for all primes whatsoever.

15591. (Lt.-Col. Allan Cunningham, R.E.)—Excluding $m=X^4+1$, state the forms of m for which $X^{12}+1\equiv0\pmod m$. Show how to find X when m is given. *Ex.*, $m=99961$.

15592. (*Communicated by* James Blaikie, M.A.)—Lewis Carroll in his diary under date December 19, 1897 (less than a month before his death), says: "Sat up last night till 4 a.m. over a tempting problem sent me from New York, 'To find three equal rational-sided right-angled triangles.' I have found *two* whose sides are 20, 21, 29; 12, 35, 37; but could not find *three*." Find the three triangles; also find another pair of equal triangles, it being given that no side exceeds 125.

15593. (Rev. F. H. Jackson.)—Find a product expression for the series in Question 15535 when $(x)_n = \dfrac{1}{x(x-1)(x-2)\ldots(x-n+1)}$.

15594. (J. J. Barniville, B.A.)—Having
$u_1=2b^2-a^2$, $u_2=a^2+4ab+2b^2$,
$u_3=a^2+8ab+14b^2$, $u_4=7a^2+36ab+46b^2$, ...,
and $v_1=a^2+2ab+2b^2$, $v_2=a^2+6ab+10b^2$, $v_3=5a^2+26ab+34b^2$, ...,
the scale of each series being x^3-3x^2-3x+1, prove that $u_n^2+u_{n+1}^2=2v_n^2$.

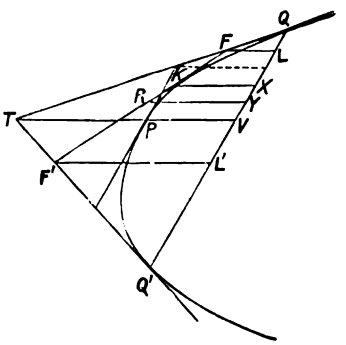
15595. (Professor Sanjána, M.A.)—Prove that
$\cosh\frac{1}{2}u\cosh\frac{1}{4}u\cosh\frac{1}{8}u\ \ldots$ ad inf. $=(\sinh u)/u$.
Hence deduce the sums of the series, ad inf.,
(1) $\dfrac{x}{1+x}+\frac{1}{2}\dfrac{x^2}{1+x^2}+\frac{1}{4}\dfrac{x^4}{1+x^4}\ldots$, (2) $\dfrac{1}{1+x}+\frac{1}{2}\dfrac{1}{1+x^2}+\frac{1}{4}\dfrac{1}{1+x^4}\ldots$.
[The first result corresponds to Euler's formula for the circular functions; in the two series x may be less or greater than unity.]

15596. (Professor Nanson.)—Find the analogue in space of n dimensions of Gauss's theorem that the middle points of the diagonals of a complete quadrilateral are collinear.

15597. (Professor Cochez.)—Construire les courbes:—
(1) $\rho=\cos\omega/(\omega+\frac{1}{4}\pi)$; (2) $\rho=(\sin\omega+\cos3\omega)/\tan\frac{1}{2}\omega$.

15598. (R. Tucker, M.A.)—PSQ is a fixed focal chord of a parabola, and R a variable point on the curve. Find (i.) the locus of the orthocentre (K) of the triangle PRQ, and (ii.) the envelope of the locus of K, supposing the chord to vary in position.

15599. (A. M. Nesbitt, M.A.)—Two tangents drawn from a point T to a parabola meet any third tangent in F and F'. If the diameter through T meet the curve in P, prove that the tangent at P bisects FF'.



[Solution by elementary geometrical conics required.]

15600. [*Communicated by* Rev. T. Roach, M.A.]—Four pennies are placed flat on a table so that each touches two of the others. Find when the space enclosed between them is a minimum or maximum.

15601. (Professor Neuberg.)—Soient A' le milieu du côté BC d'un triangle ABC; B' et B'' les points où AC est rencontré par la bissectrice intérieure et la bissectrice extérieure de l'angle B; C' et C'' les points de rencontre de AB avec les bissectrices intérieure et extérieure de l'angle C. Les circonférences A'B'C', A'B''C'' peuvent-elles toucher le côté BC sans que l'on ait AB = AC?

15602. (L. Isserlis.)—The corners ab, bc, cd, da of a quadrilateral whose sides are a, b, c, d are joined by lines p, q, r, s to the corners $\alpha\beta$, $\gamma\delta$, $\delta\alpha$ of a quadrilateral whose sides are α, β, γ, δ, aa meets in pq, $b\beta$ in qr, $c\gamma$ in rs, and $d\delta$ in sp. The lines rs, sp and qr, pq meet in pr; rp, rb, and a meet in bp; and rs, qr and sp, pq in qs. Prove that the lines qs, ba and ps, bp meet on c.

15603. (I. Arnold.)—A straight line and two circles being given, it is required to find a point in the line such that the sum of two tangents drawn from it to the two circles shall be a minimum, first when the line is external to the two circles, and second when the line cuts the circles.

15604. (Professor Lauvernay.)—Construire un triangle rectangle connaissant en position une droite Δ sur laquelle se trouve l'hypoténuse, le centre Ω du cercle enveloppant les cercles ex-inscrits au triangle ainsi que son rayon ρ.

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8937. (Asparagus.)—In a tetrahedron OABC, the lengths of the edges OA, BC are given; the sum of the lengths of OB, CA, and the difference of the lengths of the edges OC, AB are also given. Prove that (1) the volume will be a maximum when the dihedral angles opposite OB, CA are equal, and those opposite OC, AB supplementary; also (2), under the given conditions, the difference of the dihedral angles opposite OB, CA is a maximum (or minimum) for any variation of OC, AB, and the sum of the dihedral angles opposite OC, AB a maximum for any variation of OB, CA.

9308. (Professor Nilkantha Sarkar, M.A.)—A uniform rod rests in a horizontal position, being supported by two smooth pegs equidistant from its centre. If the distance between the pegs $=1/\sqrt{3}$ times the length of the rod, prove that, if one of the pegs be suddenly removed, the pressure on the other will be initially unaltered.

10360. (D. Biddle.)—A square one-storied building, having an entrance door in the middle of one of its walls, is divided into nine square rooms, each of which communicates with those adjoining it by doors in the middle of the partitions. A person entering the building begins a tour of inspection, selecting the several doors at random; but each door, once passed, is locked, and becomes no longer open to selection. Prove that the odds are 3 to 1 against his completing the tour; also find the chance of his finding himself at the end in a particular room.

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10582. (R. KNOWLES, B.A.)—The equation to a conic referred to a tangent and normal as axes being $ax^2+bxy+cy^2+gy=0$, prove that, e being the eccentricity, the equation to its transverse axis is

$$\{4a(a+c)-(2-e^2)(b^2-4ac)\}x+2b(a+c)y+bg(2-e^2)=0.$$

10644. (W. J. GREENSTREET, M.A.)—A particle projected in any direction from a point P on a curve returns after two reflexions to the point P. Find the curve.

10669. (WALTER STOTT.)—Find whether an integral of a binomial differential can be expressed in finite terms, by the aid of elliptic or hyper-elliptic functions.

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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June 9th, 1904.—Prof. H. Lamb, President, in the Chair.

The President referred to the death of Thomas Savage. who had been a member of the Society since the year of its foundation (1865).

The following papers were communicated:—

"Note on the Application of Poisson's Formula to Discontinuous Disturbances": Lord Rayleigh.

"Wave Fronts considered as the Characteristics of Partial Differential Equations": Mr. T. H. Havelock.

"Illustrations of Perpetuants": Mr. J. H. Grace.

"Types of Covariants of any Degree in the Coefficients of each of any number of Binary Quantics": Mr. P. W. Wood.

"Some Expansions for the Periods of the Jacobian Elliptic Functions": Mr. H. Bateman.

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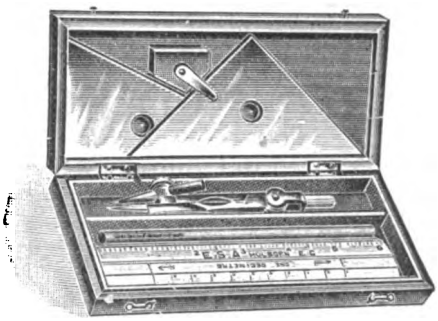

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Particulars as to qualifications for admission, Scholarships, &c., may be obtained by application to the Principal, Miss MACKENZIE-SMITH, Cherwell Hall, Oxford, or the Hon. Sec., Miss MARGARET BERNARD, High Hall, Wimborne.

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For conditions of award apply to the PRINCIPAL of the College.

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Head Mistress—Miss A. YELLAND.

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AND

Practical Classes for Inter. Sc. and Prelim. Sci.

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CITY AND GUILDS OF LONDON INSTITUTE.

SESSION 1904-1905.

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A College for higher Technical Instruction for Day Students, not under 16, preparing to become Civil, Mechanical, or Electrical Engineers, Chemical and other Manufacturers, and Teachers. The College is a School of the University of London in the Faculty of Engineering. Fee for a full Associateship Course, £30 per Session. Professors:—

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THE MIDDLESEX HOSPITAL MEDICAL SCHOOL.
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The WINTER SESSION, 1904-1905, will OPEN on Monday, October 3rd, at 3 p.m. Mr. F. J. WETHERED, M.D., F.R.C.P., will give an Introductory Address, after which the Prizes gained during the previous year will be distributed by HIS SERENE HIGHNESS PRINCE FRANCIS OF TECK.
The Annual Dinner of the past and present Students and their friends will take place the same evening at the Trocadéro at 7 o'clock, Dr. SIDNEY COUPLAND in the Chair.

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Physicians—Dr. J. K. Fowler, Dr. W. Pasteur, Dr. W. E. Wynter.
Physician to Out-Patients—Dr. A. F. Voelcker.
Assistant Physicians—Dr. F. J. Wethered, Dr. H. C. Thomson, Dr. R. A. Young.
Obstetric Physician—Dr. W. Duncan.
Assistant Obstetric Physician—Dr. Comyns Berkeley.
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Physician to the Skin Department—Dr. J. J. Pringle.
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Aural Surgeon—Mr. Stephen Paget.
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Full particulars with reference to the formation of these Centres will be forwarded to Principals of Schools upon application.
SYLLABUS for 1904 may be had of the SECRETARY.

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The Educational Times.

The State and the Universities.

"THE Universities must wait." Whatever may be the claims of University education to some further State assistance, they must wait for the fulfilment "until the Government finance is in easier condition, and until the revenue has recovered its elasticity, or other urgent and unavoidable demands have ceased to press upon the Government." Such was the declaration of the Chancellor of the Exchequer to what the Prime Minister had just called the "august and representative" deputation from the Universities and other learned institutions which went to Westminster on July 15 in quest of increased means of national usefulness. This year the Government propose to ask Parliament to double the modest grant now made to the University colleges, and hold out some hope that next year they may be able to perform the doubling operation again. At this rate the most clamorous of colleges would soon be gorged; but then the hope is but a pious aspiration. So the Universities must wait: they are neither battleships nor battalions.

The deputation was appropriately organized and introduced by Sir Norman Lockyer as President of the British Association, and as propounder of the most striking of the recent expositions of the needs of the higher learning in this country. To his appeal came prompt and cordial response from some four hundred men of outstanding position in connexion with the Universities (without exception), educational organizations, associations devoted to science and art, municipalities, county councils, and labour interests; though there was opportunity for the attendance of barely more than one in three. A more impressive deputation could hardly have been gathered together. No less impressive was their argument: it rose to the height of national concern; indeed they said pointedly "the gravest national concern." In fact, it is getting to be an old story: that our commercial and industrial supremacy is menaced by the educational methods of other civilized States, notably by the United States and Germany; that the University, the laboratory, and the workshop, no less than the primary school, are the battlefields of this new struggle; that the scientific spirit must not be confined to the workshop, but must be utilized, as other nations utilize it, in all branches of the administration and the executive; that, in sum, the question involves an important change of front, requiring us to find a new basis of stability for the Empire in face of the new conditions. The representation will not be regarded as over-coloured, except by such as do not trouble to get at the facts, or lack imagination to discern the significance of the facts. Nor did Mr. Balfour seek to minimize its importance; on the contrary, in spite of his analytical examination of certain points, he explicitly placed the question on a broader basis than any of the speakers of the deputation, except Sir Richard Jebb.

Different speakers naturally put forward different aspects. The representatives of Oxford and Cambridge, which ask nothing for immediate specific needs of their own (for very good reasons and with capable strategy), merely demonstrated in sympathy, though enforcing the main contention with excellent effect. The Chancellor of Birmingham, embroidering business methods with new-found academic experience in a wealthy industrial centre, was clear for the urgency of supersession of rule-of-thumb by scientific knowledge, and for the necessity of national grants in aid of local effort. And undoubtedly local contribution ought to be encouraged, if not laid down as a peremptory condition; yet the capacity of the locality must always be a moderating factor, and there is not a little virtue in the spontaneous liberality of local men to local institutions wherever there exists a local public spirit. But the weight of the case was laid upon the scientific aspects. For this there is obviously very large reason, not only from the importance of scientific method and of the multifarious applications of science throughout the practical work of the nation, but also particularly because of the exceptional expense of laboratory machinery and materials. It may be that some distribution of subjects may be arranged to obviate this; for, if the ambition of a University for completeness within itself is most laudable, yet it hardly expresses a national necessity, and may in select cases be left to grow to fulfilment by municipal or personal rather than by direct national agency.

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But man does not live even by science alone, and this was explicitly and forcibly insisted on by Mr. Balfour. "No University," he said, "does, and no University ought to, confine its attention merely to the education of what have been described as captains of industry; that would be a deplorable limitation of the functions of the highest teaching centres in the country." Sir Richard Jebb, speaking for the younger Universities, had just emphasized the importance of literary studies.

"On the other hand," said Mr. Balfour, "it is vain to suppose that by any mere organization or subvention of University teaching you can produce original talent." Well, but nobody does suppose anything of the kind; no such function has ever, so far as we are aware, been attributed to, or expected of, a University. But, if "mere endowment of Universities will not greatly increase the output of original work of the very first quality," what will it do? "It will," says Mr. Balfour, "or might, help to do what is now more and more required—the education, the rendering fit for industrial work, of persons who, without University education, would enter into that work ill-equipped indeed." Certainly; and, if Mr. Balfour had not been at the moment looking more specially at the main aspect presented by the deputation, he would readily enough have seen other things that it will, or might, do. We are entitled, as he himself pointed out, to look a very long way beyond the improvement of industrial work. A man can hardly go through a University course in these days without a great and permanent expansion of outlook, capacity, and usefulness in whatever department of action. And, if a University cannot produce "original talent" or "original work of the very first quality," it may, at any rate, gather and co-ordinate materials and open up vistas such as may afford original talent opportunities that otherwise would not be available. It is the fairly able man, less than a genius —the plodding, fetching-and-carrying man—that needs most to be cultivated for the ordinary work of the world. "One other thing," said Mr. Balfour, "I feel that we want, and want enormously—namely, a position which shall enable a man who has exceptional gifts of originality in science to devote his life to that for which Nature qualified him, and that he shall not be driven to some other career for which he is hardly less qualified, but in which he is able to do much less service to his country and humanity at large." This is well said if "science" be taken comprehensively, and not in the narrow sense of convention. Nor less timely was his hint to employers, who have certainly not awakened here, as they have awakened in America and Germany, to the superior commercial value of the employee of trained intellect.

To the Chancellor of the Exchequer was left the "much less grateful task" of explaining what the Government could do and what the Government could not do in the existing circumstances. His anxiety not to check the flow of private liberality was at least respectable, especially in view of the rather distant day when employers shall have adequately realized the value of brains that have not grown from an office stool or from polishing the handles of the front door. Otherwise, the argument would have been no more than a pitiful signal of distress. His more elaborate question—how far the Universities would be willing to sell themselves to the State, or how far they would submit to State direction or influence in regard to their teaching—need hardly be considered. If the Universities are wise, they will keep their hands free: the State may well be satisfied with results. On this point, the example of Germany and France is a warning rather than an encouragement: we have outgrown the drill-sergeant here. "No control, no money" is a good maxim in its place, but it needs to be applied with discretion. Altogether, the Universities may take courage from the demonstration, and hope for better things in times of less expensive policy and a fuller treasury. For, as Sir Arthur Rücker justly pointed out at Bangor, "neither private beneficence nor municipal aid can suffice to place the English Universities in the position they ought long ago to have attained. The want of equipment, the low salaries, the entire absence, or inadequate supply, of pension funds, the large sums needed to make good the neglect of the past—all these cannot be provided by individuals or by rates which can barely cope with the needs of elementary and secondary education."

NOTES.

The Board of Education have issued a report, presented to them by the Consultative Committee, containing proposals for a system of School Certificates. They have already circulated it to the English Universities, to professional bodies, and to individuals interested; and copies may be obtained on application to the Secretary, Board of Education, Whitehall, S.W. The Board are anxious to obtain an expression of the views of all parties interested, and meantime refrain from giving any indication of their own opinion. The inquiry was started by the Head Masters' Conference, which in 1901 addressed to a number of professional bodies a memorial drawing attention to "the grave inconvenience and waste of time caused by the multiplicity of examinations for entrance into professions," and suggesting "the institution of a single examination, to be held at centres three times a year; also that, if possible, a list of equivalents to this examination should be arranged for, to be adopted in common by all the bodies." This memorial the General Medical Council forwarded to the Board, and the Board referred the correspondence to the Consultative Committee for their advice. Last year and this year the Committee held five conferences with representatives of five sets of institutions interested, and heard the evidence of Mr. J. Struthers as to the working of the Leaving Certificate of the Scotch Education Department. On this elaborate basis of investigation, together with careful survey of the present circumstances of the secondary schools, they framed the scheme now submitted for consideration.

The Consultative Committee approve of "a general system of school certificates" granted on examinations not "conducted by means of papers set for the whole country from a single central organization," but "controlled by a recognized examining body." This examining body "should

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be either (1) a University, or (2) a combination of Universities, or (3) an Examination Board representative of a University or Universities and of the Local Authorities which are prepared to co-operate with them"; and "it is desirable that, whatever the examining body may be, teachers of schools should, where possible, be represented, and, with regard to (3), that every such Board should contain a large academic element." Then "recognition of these examining bodies should mean recognition by the Board of Education, acting on the advice of the Consultative Committee." It is proposed to require from every school presenting candidates for school certificates two conditions: (1) submission to periodical inspection (whether by officers of the Board of Education or by a University or other organization recognized under Section 3 of the Board of Education Act, 1899), the report being communicated to the examining body; and (2) the communication of the course of studies pursued in the school to the examining body. In order to secure a uniform standard, practically sufficient, the Committee advise the establishment of a Central Board for England (excluding for the present Wales and Monmouth) "consisting of representatives from the Board of Education and from the different examining bodies, whose duty should be to coordinate and control the standards of these examinations, and to secure the interchangeability of certificates, and to consider and as far as possible to adjust the relations of the examining bodies and their spheres of external action." The examination, they think, "should be conducted in each school by external and internal examiners, representing respectively the examining body and the school staff; and the school record and report of the examiner should be available for reference. There should be a Senior and a Junior Certificate. Teachers should see the proposals in detail. They have manifestly cost much labour and thought. The Northern Universities, which have been considering the distractions caused by multifarious examinations in secondary schools, may obtain some hints here.

THE election of Prof. John Morris Jones to a Research Fellowship of modest value and for a limited period at Jesus College, Oxford, seems a remarkably sensible and opportune act of the governing body of his old college. Nowadays it is understood that a professor's duty includes the advancement of learning as well as the labour of teaching. In the University colleges, however, the salary—when there is a salary—is rarely calculated to cover the part of the duty that is fundamentally the more important, and Prof. Jones's college—the University College of North Wales—is no exception. Prof. Jones, we learn, is accumulating materials for a comprehensive scientific treatise on Celtic grammar. Here, then, is a work that cries to be done, and a scholar that is eager and competent to do it; and fortunately the materials are contained within a comparatively small geographical area, and not scattered over a continent. Yet even the generosity of Welshmen does not volunteer to the scholar, though a native and a worker for the honour of the country as well as for the advancement of scientific knowledge, a gratuitous provision of railway and wagon fares, or of local bread and cheese. That is the prosaic concrete fact, which the popular imagination seems unable to realize when it demands scholarly investigations from professors. Again, here is a research endowment for a scholar that has shown his ability to use it to the best advantage. And that suggests the question whether the numerous research scholarships now awarded to young students on mere University examinations might not secure very much more valuable results if they were applied in aid of the investigations of mature scholars—a question that claims, we are disposed to think, more thoughtful consideration than it yet seems to have received.

YET another congress has established itself—the English and Welsh Students' Congress, which means to be a permanent organization "to promote the general interests of the students and to advance social and academic unity." No doubt it was a "felt want"; at any rate, it is a new development—on this side of the Border: on the other side, the Scottish Universities have long had their several Students' Representative Councils, and these have met in common deliberation. Moreover, it is a laudable development; the students have their own importance in the University system, apart from the contribution of fees, and apart from the experimental operations of professors; and, whatever their views of academic affairs may chance to be, it is all to the good that they should find formal constitutional expression. It would be easy enough to poke fun at the institution: a contemporary, for instance, says "a code of ethics might be formulated for the guidance of students who attend ceremonies when degrees are conferred." It might; indeed, it probably will: for the extravagances of some are not to be taken as the characteristic conduct of all. The Aberdeen Students' Representative Council, for example, though they may not yet have succeeded in devising measures likely to secure that a single sentence of their Lord Rector's address should be heard, yet have admittedly done excellent service to the University authorities in the investigations of that ugly episode of the Alake. Institutions need time to grow, and they should be encouraged in their aspirations to grow straight. We wish the new Congress every success. But people that are not students—what have they to do with the business? Let them keep to their own galleys.

THERE is quite enough to say against examinations without saying the wrong thing. Prof. Schuster—if one may trust a condensed report of his remarks to the Students' Congress at Manchester—seems to have been on the verge of saying the wrong thing, or at least suggesting it by implication. He is represented as having condemned the publicity given to school successes, on the ground that it leads to the neglect of the chief work of a school—the building up of the average student. That the building up of the average student is the chief work of a school may be readily admitted, seeing that the bright scholars and the duffers are probably in a small minority. But the struggle for superiority is in the blood, and the declaration of examination results has an exhilarating effect both on students and on parents. If the attainment of distinguished results is in any case proved to have been secured by neglect of the main body of the school, then there is room for complaint, but not

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till then: there is no *a priori* ground for the suggestion of such unfairness. The examination, and the publication of results, may be—and ought to be—an impetus to the students and to the teachers and to the cause of education: the possible evils attendant on examinations are to be gibbeted apart; they are not inherent in the system, and ought not to be used speculatively to prejudice the system. On the other hand, if you abolish examinations and publication of results, or issue your degree and other lists without division into classes, is there not the risk of a positive check to honourable ambition and even to reasonable diligence, as well as a remarkably good chance for a dull uniformity of inconsiderable attainment?

THE puzzlements of military organization would appear to extend to the new scheme of entrance examinations. An early effect of these, as Dr. Glazebrook recently pointed out in the *Times*, will be that "the great majority of English officers in the future will be without any tincture of the language which has hitherto been the basis of all liberal education"—"a revolution which is the fruit not of policy, but of miscalculation," for "the avowed intention of the Army Board, supported by the strong representations of eminent soldiers, is to retain Latin as part of the normal training of an officer." The perverted operation of the scheme is thus explained by the Head Master of Clifton:

> In the "qualifying" examination, besides the compulsory subjects, each candidate has to choose two out of the following:—(1) Latin or Greek; (2) French or German; (3) Science. Since every boy takes either French or German, and not one in a hundred offers Greek, the real choice is between Latin and Science. In making that choice, boys are naturally determined by the consideration of what will pay in the later and more important stages. For admission to Woolwich and Sandhurst the two subjects count alike; but at Woolwich in the all-important competition which decides whether a boy is to be an Engineer or an Artillery officer, and assigns his seniority in either service, Science counts heavily and Latin not at all. Consequently every Woolwich candidate with a particle of ambition will prefer Science from the first. At Sandhurst knowledge counts for so little, in comparison with drill and athletics, that the choice is less important. Still, Science does count for something, while Latin goes for nothing. For this and other reasons a majority of Sandhurst boys will undoubtedly prefer Science.

Undoubtedly; and Dr. Glazebrook has ascertained "that at several of the principal schools which prepare for the Army it has already been decided that all candidates for Woolwich, and a large proportion of candidates for Sandhurst, shall drop Latin after the present school term." So, by an accident of miscalculation, in the teeth of the avowed intentions of the Army Board, Latin ceases to be compulsory, becomes voluntary, and proceeds to disappear from "the normal training of an officer." Perhaps Dr. Glazebrook's protest will not lack support, and may yet prove not ineffective.

IN this country we have heard but little of the transference of the Government's activity in educational reform to the other side of St. George's Channel. The Irish, however, appear to have obtained indications of a design to break up the National Board of Education and to put in its place a brand-new Department of Education. Upon this alleged project the archbishops and bishops, in annual conclave at Maynooth, have pronounced an unambiguous opinion:

> A Department of Education may be well enough in England, where society is socially and politically in a normal condition, but in Ireland it would mean another outwork of Dublin Castle and a further opportunity of practical ascendency for a favoured sect. To say the least of it, it is suspicious to see the Chief Secretary, who refuses the great educational reform that nine-tenths of the Irish people earnestly and persistently demand, pressing upon us changes which the country does not ask for, and which run counter to all our religious sentiments.

We must await developments. Strong reasons indeed would be necessary to justify "changes which the country does not ask for and which run counter to all our religious sentiments." On the other hand, it is anything but clear why "the great educational reform that nine-tenths of the Irish people earnestly and persistently demand" should not be carried out—assuming that the Irish correspondent of the *Manchester Guardian* interprets it aright. He says this:

> The demand for a Catholic University has been long since given up. This demand was only made before the Test Acts, when the existing Universities were exclusively Protestant. There are at present two Universities in Ireland—Trinity College, Dublin, and the Royal University, which is only an examining body. The reform recommended by the Royal Commission on University Education in Ireland in 1903 is that the Royal University should be turned into a teaching University consisting of four colleges—namely, the three Queen's colleges in Belfast, Cork, and Galway, and a fourth college to be founded in Dublin. The Catholics of Ireland are satisfied with this, and the present income of the Royal University can be utilized for the support of the scheme without resorting to the Treasury . . . The proposed new University and its federal colleges would be non-sectarian. The expression "Catholic University" is now used only by the enemies of popular education; the Irish Catholics no longer ask such a thing. They merely ask for a University or University college which would be equipped and conducted on modern lines, like the new Universities of England and Wales, and which would be free from the control of an offensive ascendency.

If this diagnosis of Irish opinion be correct, there ought to be little difficulty in effecting a satisfactory settlement of an unnecessarily troublesome question.

NOW is the time for the sea-serpent, the big gooseberry, and paterfamilias's grumble about the excessive length of holidays at public schools, and inferentially at other schools that follow the times and seasons of the public schools. For example, a correspondent of the *Morning Post*, presumably a long-suffering paterfamilias, writes all the way from Dresden—no doubt at some risk to the enjoyment of his well earned holiday—setting forth elaborate calculations and inconclusive arguments. He finds that a sample public-school prospectus announces vacations totalling fifteen weeks a year; he finds also that the holidays at the Gymnasien and the Realschulen in Prussia and Saxony total twelve and a half weeks. There are other pertinent differences, which he neglects, probably not appreciating the relevance of them; but is the time-difference really worth half a column of a London morning daily, or even half a "stick"? If there "prevails in some of our public schools a custom of granting an extra week's holiday on some trivial pretext," then such custom, unless very specially justified, should, we agree, "be strenuously resisted by parents." But that is another story. How "the present system makes the actual cost of public-school education much in excess of the nominal cost" is an administrative and financial problem of complexity beyond our grasp. Evidently such complainants little appreciate the case for the schoolmaster, or for the pupil either.

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UNIVERSITY ORGANIZATION.

THE FUTURE OF THE FEDERAL SYSTEM.

Sir Arthur Rücker, Principal of the University of London, delivered the annual academical address at the close of the session at University College, Bangor. After referring to the older Universities, he dealt with the federal system and the problems of the future connected with it. It seemed possible that the country might ultimately be covered with a network of federal Universities, each large enough to be of national rather than of merely local importance. Oxford, Cambridge, and London stood, for obvious reasons, outside the general scheme. Unlike the colleges of Oxford and Cambridge, the colleges of the federal Universities were not supported by ancient endowments, but depended for financial support upon public opinion. The University colleges were unquestionably local in character, and the feeling grew that the University with which each college was associated should be local also. They were founded by local benefactors, controlled by local ability, and supported by local funds. Nevertheless, more money was needed, and at last the Government had begun to make moderate grants to University colleges. With Government help came Government inspection, and of late small committees of experts had been appointed at short intervals to report upon the needs and the efficiency of University colleges. This supervision was now extending its range. The money had been given to and the right of inspection exercised over colleges. Such inspection would be exercised not merely at long intervals by means of Statutory Commissions, appointed when organic changes were required, but regularly and systematically as part of a uniform official routine. A newspaper paragraph had lately conveyed the impression that elsewhere a city council would inspect a local University in exchange for an annual grant. Doubtless the relation between a local University and the Local Educational Authority must be intimate, and thus there would be exchanges of opinion on matters hitherto reserved for the exclusive consideration of the University authorities. If the Municipal Authorities were willing to give financial help to the local Universities without attempting to reduce them to the condition of mere departments of their educational offices; if the Universities were willing to receive friendly hints as to public opinion from the Authorities, and were able to relieve them of some of their overwhelming duties by inspecting for them, by carrying on educational work for them, and the like, the alliance of the two must be entirely beneficial. But there could be no doubt that neither private beneficence nor municipal aid would suffice to place the English Universities in the position they ought long ago to have attained. The want of equipment, the low salaries, the entire absence, or inadequate supply, of pension funds, the large sums needed to make good the neglect of the past, all those could not be provided by individuals or by rates which can barely cope with the needs of elementary and secondary education. There was in this respect considerable confusion. We could not in this country pass from a purely national to a purely local University system. Oxford and Cambridge must remain, as they had always been, national Universities. The University of London has been deliberately re-organized under the authority of Parliament. It was of a non-local character and yet had local powers and duties. Our University system was not, therefore, directly correlated with the local character of our educational authorities. Similar complications existed elsewhere. There were wide differences of opinion as to the method of conferring degrees. The highest existing authority had within four years laid upon the University of London the duty of providing for external students; but he would stand aghast at the prospect of half-a-dozen Universities all holding such examinations in competition with each other. The present system might lead to an unseemly rivalry between different Universities competing either for fees or for influence. Yet not only was there room for differences, but there must be differences, between our Universities. But when all allowance was made there were a number of questions of general import which ought to have been answered before a policy of University expansion was decided on. Such questions were: the limitation in the number of Universities; the conferring of degrees without attendance at local lectures; the degree of liberty allowed to carry out local and school examinations and to recognize subordinate institutions; the endowments of the Universities and the colleges, and the recognition of the University as distinct from its component colleges; and the question as to the amount and methods of inspection. At present, while these problems were unsolved and a number of bodies were being created with overlapping powers and jurisdictions, except to a believer in the infallible virtues of competition, this overlapping seemed dangerous to the future of many sides of University work.

SUMMARY OF THE MONTH.

Elsewhere we refer to the important deputation to the Prime Minister on the question of State-aid for the Universities. (See leading article.)

The holiday course, mainly in modern languages, initiated by the Teachers' Guild and carried out with the co-operation of the University of London, opened (July 18) in the University buildings at South Kensington. Some two hundred foreign teachers attended. The course embraced lectures on different aspects of English education, literature, and institutions, by Prof. Walter Rippmann (director of the holiday course), Mr. Graham Wallas, L.C.C., Prof. Hall Griffith, Mr. F. Storr, Dr. H. F. Heath, and Dr. R. D. Roberts. The introductory address was given by Sir Arthur Rücker, who welcomed the students to London, and gave a short account of the different types of University in this country, sketching the gradual change from the residential system of Oxford and Cambridge to that of the newer types of University situated in great centres of population. It was now felt (he said) that the teaching of modern languages was too important a matter to be left entirely to private initiative. Some of the teachers present had been sent or aided to come to London by the Governments or Education Departments of their respective countries, and it was hoped that the present meeting might in future be looked back to as one of the earlier stages of a great movement.

Sir Arthur Rücker distributed the prizes at University College, London (July 5), congratulating the College on a successful year's work. The subject in all their minds, he said, was their forthcoming incorporation with the University of London. It was no slight matter for an institution like their college, with a past behind it, and with such great names associated with it, to be willing to throw in their lot with the University of London, which, though he believed it had a great future, was, nevertheless, comparatively young in its present form. He did not think that the University should be the sole teaching body in London, nor did he think it wise that it should control all the teaching in the medical schools. There were other institutions which should be carried on independently by their own officers, but co-ordinated with the University. Lord Reay expressed the regret of the College at their losing the services of Principal Carey Foster, by retirement. The staff of the College had put upon record an expression of their gratitude for the benefits which Dr. Carey Foster had conferred on the College, and this was embodied in an address, which was then presented to him.

Sir John Wolfe Barry, distributing prizes and certificates at King's College, London (July 6), said that, though the College had now reached a respectable age, yet it was young in vitality and showed every sign of vigorous youth and manhood. They might, he thought, look forward to still greater developments in consequence of its association with the University of London, from which it had already gained much. They recognized progress in every branch. It was most satisfactory to learn that the Far East was claiming the attention of the College. How little they knew of the great literatures of China and Japan! The more they learned of Eastern literature the more they recognized that the origin of all knowledge was under the rising sun. In the Faculty of Science there had been great developments. The amount of time given to science now was immensely greater than it was when he was a boy, and it was a matter for congratulation that that was so. What was being done in that College was being done elsewhere, and we were sending a great scientific army into the world such as was not dreamed of thirty or forty years ago. But they could not help recognizing that very much remained to be done. It was, in the first place, very desirable that more money should be furnished for the pursuit of science; in the second place, more time ought to be devoted to the subject, and those who were about to pursue it should come up to the colleges with better preparation. He had no hesitation in saying that a great part of the first year of a man's life in a college was lost in repairing deficiencies which

ought to have been obviated in the secondary school. He hoped the secondary schools of the country would recognize that matter and would rise to the occasion. Sir John also referred to the urgency of the engineering problems involved in coping with the enormous traffic of the Metropolis.

A CONGRESS of students from the Universities of England and Wales was held at Manchester on June 30–July 2. Every University sent representatives, and the delegates (some fifty in number) were cordially welcomed by the Vice-Chancellor of the Victoria University, Dr. Hopkinson. During the session messages of good will were received from the Prince of Wales, the Duke of Devonshire, Lord Rosebery, Mr. Chamberlain, and Lord Ripon, as Chancellors respectively of the Universities of Wales, Cambridge, London, Birmingham, and Leeds. Mr. W. G. Fuller, Chairman of the Manchester Students' Council, which took a leading part in promoting the congress, was elected President. A number of resolutions were adopted: (1) that greater freedom should be given in degree courses, so as to allow more time for private study and research, and that the division of degree lists into classes should be abolished; (2) that an Inter-University Volunteer Corps should be established; (3) that a British Students' Song-Book should be published; (4) that the principle of University settlements was worthy of approval; (5) that the extension and development of residential halls was a matter of great importance to University students, and that a Committee should be appointed to report on University residential arrangements at home and abroad; and (6) a resolution "urging the encouragement of inter-University athletics."

THE Board of Education have set out their regulations, old and new, as to training colleges in a separate and compact form. In summary thus:—

In the first place, the Exchequer grants in respect of day students who reside in approved hostels will be on the same scale as the grants made in respect of residential students.

Secondly, much greater liberty is given in the conditions under which students who have reached a satisfactory standard of general education may obtain a one year's course to be mainly devoted to professional training.

Thirdly, a fixed grant of £3 per student per annum is substituted for the variable science and drawing grants which have hitherto been paid to training colleges.

Fourthly, a new type of training college may be recognized, which, though not in connexion with a University or University college, need not on that account be a residential college, as has hitherto been the case.

Lastly, the arrangements for the inspection of the colleges and for the examination of students are considerably modified. A great variety of examinations alternative to that held by the Board are now recognized, but the privilege of taking such examinations and of exemption from the Board's examination will in future only be granted to such colleges as fulfil certain important educational conditions.

THE Education Council of the Congregational Union has prepared a statement to the effect that any system of schools—primary, secondary, or technical—established, maintained, or subsidized by public funds, must, if it is to be acceptable to the constituents for whom the Congregational Union is entitled to speak, embody and apply the following principles:—

1. That the sole object aimed at in such schools should be the efficient preparation and equipment of the scholars for the future performance of the duties incumbent upon citizens of the British Commonwealth, and that this object should never be subordinated to the interests of a religious denomination or a political party.

2. That the curriculum of such schools should be comprehensive and thorough, so that the scholar may receive as complete an education as his or her capacity and opportunity will allow; and that this curriculum should be so framed as not to permit of sectarian instruction, or in any way to violate the principles of religious equality.

3. That, in order to secure efficient teaching, the public authorities should be required by statute to provide for the training of teachers in classes or colleges open on equal conditions to all candidates for the teaching profession; and that no one in any training class or college supported from public funds should be favoured or prejudiced in consequence of his or her faith or church.

4. That every school dependent on public funds should be managed by a Public Authority, this Authority to be representative of the whole community in each district concerned.

THE report presented at the first annual meeting of the University Extension Guild (July 6) stated that, although it was not twelve months since the Guild had been established, the work accomplished and the influence exerted had been considerable, and gave the best hopes of success in the future. The Committee had made an unsuccessful effort to obtain accommodation at the National Gallery for the delivery of lectures; but privileges had been granted by the Trustees of the British Museum. Mr. Mark H. Judge, Chairman of the Committee, said that thus far they had been engaged with the organization of the Guild; but next year they would be able to devote themselves to the work the Guild had been established to promote. Dr. R. D. Roberts, Vice-President, who presided, said the plan of special classes and supplementary lectures had proved most satisfactory. He suggested that an effort should be made to induce the local centres not yet affiliated to the Guild to become corporate members of it, and thus make the Guild a more powerful metropolitan organization for promoting the University Extension movement. The report was adopted unanimously.

SPEAKING at Carmarthen Training College on the occasion of the distribution of prizes, the Bishop of St. David's praised highly the success of the Welsh colleges, and especially of that at Carmarthen. He was particularly pleased that this year ten places had been added for non-resident students irrespectively of their opinions. Of all the aspects of the education question none was of more far-reaching importance than the training of teachers; and, therefore, to the friends of education nothing was more encouraging than to find that and similar colleges in such a satisfactory condition. They were specially bound to keep steadily in mind the vital importance of religious training for those who had, he hoped, generally to give religious instruction to children in their future work. In view of present controversies, he would emphasize the value and strength of patience. He thought he saw signs of improvement in the relations of Local Education Authorities to Church schools in Wales, and it was important for them, while they firmly stood to the principles of which they were trustees as Church-people in these days, at the same time to take care that they did not lose sight of the great common interests in education, which very often in days of controversy were apt to be neglected.

AN influential deputation representing the medical profession presented to Lord Londonderry (July 11) a petition in favour of the teaching of hygiene in schools. The petition stated that the signatories (14,718 registered medical practitioners), having constantly before them the serious physical and moral conditions of degeneracy and disease resulting from the neglect and infraction of the elementary laws of hygiene, urged the Educational Authorities to consider whether it would not be possible to include in the curricula of public schools such teaching as might lead all the children to appreciate at their true value healthful bodily conditions as regards cleanliness, pure air, food, drink, &c. Dr. Farquharson, M.P., introduced the deputation, and the petition was explained and supported by Sir William Broadbent, Dr. Drysburgh Griffiths, Sir Thomas Barlow, Sir Lauder Brunton, Dr. Mary Scharlieb, and Sir Victor Horsley. Lord Londonderry, in reply, said that, though there were certain difficulties which would prevent his giving them any very definite answer to their very definite proposals, they must not therefore think he was not in sympathy with them. For one thing, properly trained teachers of hygiene did not exist at present, but the Department was endeavouring to secure the training of such teachers. He would also have to wait for the report of the Commission appointed by the Duke of Devonshire on the physical condition of the people before knowing exactly what remedies were necessary, and there might be other Departments with which it would be necessary to co-operate. His Department had not only endeavoured to secure the training of teachers in this matter, but they were also about to issue a volume containing practical instruction in the subject.

THE foundation stone of the new buildings of the Working Men's College, in Crowndale Road, St. Pancras, was laid (July 16) by the Prince of Wales, who was accompanied by the Princess. Prof. Dicey, the Principal, read an address, and then spoke briefly, calling attention to two ideas of the founder (F. D. Maurice): (1) that a collegiate or University education could, and ought to, be offered to working men; and (2) that success in the project required the combination of self-help and social sympathy. The Prince expressed his cordial sympathy with the aims of the institution, and hoped that the appeal for funds

would meet with a liberal response, and that his presence there would be accepted as a proof of the interest he took in all that affected the well-being of the working classes.

THE Admiralty has issued a circular to officers of the Royal Navy with the view of encouraging the study of foreign languages. The number of officers allowed to study abroad on full pay at any one time is increased to twenty. Full pay will be granted without any condition as to subsequent qualification in the language studied, and the period for which it is granted will count as service. Gratuities will be paid for qualifying in the various languages after study abroad, a distinction being drawn between officers who qualify in the higher standard and those who qualify in the lower standard. Prizes to the increased value of £130 annually will be awarded to midshipmen who attain proficiency in French, German, Italian, or Spanish. Special arrangements are made to assist officers in studying the Japanese language.

THE London Teachers' Association, which now comprises all Certificate-holders in provided and non-provided schools within the area of the London Education Committee, held its first quarterly meeting at the Memorial Hall on July 4. Sir William J. Collins said he and his colleagues fully recognized the value of such an association, and were anxious to obtain and to utilize the matured views of those upon whom rested the practical administration of the Act.

MEMBERS of the St. Marylebone Natural Science Society, which has been in existence for the past six years, have just celebrated the opening of a new museum and lecture hall, 444 Edgware Road. The work of the Society is made the more interesting by the fact that it is carried out entirely by working people, and is self-supporting. The materials and labour for the new building have been provided by the members themselves. The lectures, which embrace all manner of scientific subjects, are delivered free of charge. There is no paid official.

WE record with regret the death of the Rev. Henry Hayman, D.D., Hon. Canon of Carlisle, at the age of eighty-one. After holding several minor head masterships, he succeeded Dr. Temple at Rugby, where he fell into serious difficulties, which ended unfortunately for him. He was soon appointed to the rectory of Aldingham, however, and this he held for some thirty years. He was an active literary worker and a spirited controversialist. His most ambitious achievement was an elaborate and interesting commentary on the "Odyssey," in three substantial volumes.

WE regret to announce the death of Mr. James Stuart Laurie, M.A., Barrister-at-law, at the age of seventy-three. Mr. Laurie had a long and distinguished educational career. He was sometime an Inspector of Schools, but resigned the office, in protest against Mr. Lowe's Revised Code. He was entrusted by Government on various occasions with educational investigations of a special character—as Special Commissioner to the African Settlements; Assistant Royal Commissioner, Ireland; and Director-General of Public Instruction, Ceylon. A man of very independent character, he conducted much controversy in the public prints against educational measures that he regarded as retrograde.

London. NEW regulations for degrees in Laws have been adopted both for internal and for external students. These have been framed on a wider and more comprehensive scale than the regulations they will supersede.

The Senate have resolved to add Sociology to the list of optional subjects for the B.A. Honours degree in Philosophy and for the B.Sc. Honours degree in Economics for both internal and external students. For the Arts degree the special aspect of the subject will be "The Comparative Study of Social Institutions," and for the degree in Economics the same, together with "Psychology" and "Ethnology."

The Board to promote the Extension of University Teaching have submitted to the Senate a scheme drawn up by the Board of Studies in Pedagogy for the training of teachers who are not studying for a University degree. The course extends over two years, of which the first is devoted to general education and the second to professional education. The Senate have approved the scheme, subject to possible modification in detail.

The negotiations between the Universities of Oxford, Cambridge, and London, with a view to the establishment of a system of mutual recognition of entrance examinations and certificates exempting from entrance examinations, have resulted in a report by a committee of representatives appointed by the three bodies. London and Cambridge approve the suggested scheme. Oxford is thinking about it.

In connexion with the scheme recently promulgated by the Army Council for the appointment of University candidates to commissions in the regular forces, the Senate have resolved to appoint Instructors in Tactics and Strategy, in Military History, in Military Engineering and Military Topography, and in Military Law and Administration.

The Senate have adopted the recommendation of the Board to promote the Extension of University Teaching that the School-leaving Examination should in future be called the School Examination (Matriculation Standard), and that the examination conducted in any subject by what is now called a Special Advanced Paper should be called School Examination (Higher Standard) in that subject; also the recommendation that a candidate who has passed at one and the same time an examination in papers either of the Matriculation Standard or of the Higher Standard in the subjects and combinations of the subjects required by the regulations for Matriculation should, if the other conditions for the School-leaving Certificate were satisfied, receive on leaving school a School-leaving Certificate They have also approved the proposal that pupils at a school qualified to present candidates for the School-leaving Certificate who, having matriculated before 1903, offer themselves for examination in one or more special advanced papers, be entitled, if they otherwise satisfy the conditions, to receive on leaving school a School-leaving Certificate as if they had passed the examination after the regulations for that certificate had been approved by the Senate; and also that in schools presenting candidates for the School-leaving Certificate General Elementary Science be accepted as an alternative Science subject, provided that the school possesses adequate facilities for practical work and that a practical examination in the subject is held in addition to the paper work.

Manchester. THE University of Manchester has just issued the first prospectus of the Faculty of Commerce and Administration, containing the regulations relating to degrees in Commerce (B.Com. and M.Com.) and the syllabus of classes for the session 1904–5. The degree of Bachelor of Commerce is granted to matriculated students who have attended classes and satisfied the examiners in political economy, the organization of commerce and industry, modern history, geography (economic, political, and physical), commercial law, accounting, two modern languages (or one modern language carried to an advanced stage), and one or two special subjects. The degree of Master of Commerce will be conferred on Bachelors of Commerce of not less than three years' standing who have pursued more advanced studies in connexion with the Faculty of Commerce and Administration and have presented a dissertation which has been accepted by the Faculty. It will be seen that the design of the curriculum is that a broad basis should be laid for the studies of those who desire to qualify themselves for these degrees. It is hoped that the training provided will develop and discipline the minds of those who go through it. It is not intended as a substitute for experience. Classes in the Faculty of Commerce and Administration are held both in the day and in the evening, and it is hoped that some students who do not desire to take the whole course will attend some of the classes.

Liverpool. THE University of Liverpool Bill, introduced by Sir John Brunner, and backed by Mr. Haldane and all the Liverpool members (except Mr. Austin Taylor), is in the common form, extending to graduates of the University the same eligibility to office and the same privileges and exemptions as are enjoyed (under Act of Parliament or regulation of any public authority) by graduates of Oxford, Cambridge, London, or Manchester.

Leeds. ALTOGETHER £51,000 has been either promised or received towards the University extension fund, which it is proposed shall reach £100,000. The Lord Mayor of Leeds (Mr. Arthur Currer Briggs) is taking a leading part in the promotion of the fund, having issued an appeal to the citizens in the form of a circular; but it is intended that the appeal shall not be confined to Leeds.

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Wales. THE establishment of a Rectorship of the University is mooted. The Rector would undertake duties at present performed by the Senior Deputy-Chancellor and by the Vice-Chancellor, and be, in fact, the working head of the University. Some of the chief officials, and especially the unpaid officials, naturally find the claims on their time and energy somewhat exacting.

One of the most remarkable results of the establishment of the University of Wales is the great impetus given to the study of Hebrew in the Principality. About fifty candidates from the three colleges sat in Hebrew at the recent Arts examination. The pioneer work was done by Dr. Ethé, of Aberystwyth, and the Rev. D. Tyssil Evans, of Cardiff. Then Bangor took up the study, and Dr. Witton Davies was appointed Professor of Hebrew and Arabic. A step forward in the study of the Semitic languages in Wales is about to be taken by making a course in Arabic compulsory for all candidates for Honours in Hebrew.

Wales—Bangor. THE University College of North Wales Building Fund stands at present at £27,121, of which old students of the College have contributed £1,373 and the staff £1,019. With the estimated value of the site presented by the town of Bangor, the fund represents an aggregate total of £42,000. The amount required is £200,000.

Wales—Cardiff. SIR ALFRED THOMAS, the President, proposes to give a *conversazione* in the beginning of October next to celebrate the twenty-first anniversary of the opening of the College. The celebrations, indeed, will probably take a wider form.

Aberdeen. LORD STRATHCONA, the Chancellor, was installed with great ceremony on July 20. It is some forty years since the instalment of his predecessor, the late Duke of Richmond and Gordon.—A bronze tablet in memory of the late Field-Marshal Sir Donald Stewart, Bart., was unveiled by General Sir Peter Lumsden, G.C.B., at King's College, and accepted for the University by the Chancellor.

St. Andrews. THE General Council of the University of St. Andrews, while expressing general approval of the principle of the Education (Scotland) Bill, and regarding the proposals in Clauses 43 to 45 (to establish Provincial Councils for Education in Scotland on which the four Universities are to be represented) as greatly tending to promote the cause of higher education, yet "deeply regrets to find that the division of Scotland for educational purposes indicated in the Bill is a departure from that which has prevailed for generations, and was formally established by Parliament in the Parochial and Burgh Schoolmasters (Scotland) Act of 1861. In that division the University of St. Andrews has a province attached to it—namely, the counties of Clackmannan and Kinross, Fife, Forfar, and Perth—a province nearly equal in population to the province attached to the Universities of Edinburgh and Aberdeen, and considerably larger as regards population than the province to be connected with Aberdeen. If, as under the Bill, there is to be a province attached to Inverness, the General Council is strongly of opinion, not only on sentimental grounds, but on grounds of historical continuity, and to avoid what it fears may be injurious alike to the University and to education, that the old division should be more closely followed. The General Council has no objection to Inverness also being the centre of a province, should this be thought desirable. Whether, however, there be four or five provinces, it is of opinion that one of them should bear the name of St. Andrews and should include the counties already named. The General Council fears that the amendment by the Secretary for Scotland on Clause 39, the sanctioning by or with the approval of the Department of training colleges for teachers, may not be so beneficial as is intended. The General Council considers that, as the Bill does not deal adequately with the training of teachers, it would be better to leave this matter, which urgently calls for attention, to separate legislative treatment as a whole in the near future."

For the St. Andrews L.L.A. there entered this year 960 candidates, as against 902 last year; 306 for the first time, as against 231 last year. 1,400 papers were written, and passes were obtained in 746 and Honours in 214. The most popular subject was French; then English, History, Geography, Physiology, Comparative Religion, Education. "In Latin 9 passed and 1 obtained Honours; in Greek 2 passed."

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CURRENT EVENTS.

Fixtures.

Besides the announced sociological and ethnological courses of Dr. Westermarck and Dr. Haddon under the Martin White Benefaction (University of London) next session, a course on Comparative Ethics will be given by Mr. Leonard Hobhouse.

* * *

The Third International Congress of Mathematicians will be held at Heidelberg, August 8–13. Hon. Sec.: Prof. Dr. A. Krazer, Karlsruhe-i.-B., Westendstrasse 57.

Honours.

The University of Edinburgh has conferred the honorary degree of LL.D. on Mr. Samuel Henry Butcher, Litt.D., LL.D., lately Professor of Greek in the University; the Hon. Sir Walter Francis Hely-Hutchinson, G.C.M.G., Governor and Commander-in-chief, Cape of Good Hope; Mr. John Morley, M.P.; Sir George Reid, LL.D., D.L., lately President of the Royal Scottish Academy; and Mr. William Thomson, M.A., B.Sc., Registrar of the University of the Cape of Good Hope.

* * *

Durham University has conferred the honorary degree of Litt.D. on Mr. Joseph Hall (editor of *King Horn*); and of D.Sc. on Mr. R. A. Sampson, F.R.S., Professor of Mathematics, Durham College of Science, Newcastle-on-Tyne.

* * *

The Victoria University of Manchester has conferred the honorary degree of LL.D. on Alderman Joseph Thompson, formerly Treasurer of Owens College; and the honorary degree of D.Sc. on Dr. Bohuslav Brauner, Professor of Chemistry in the University of Prague, and a former student of Owens, Mr. Ludwig Mond, F.R.S., and Mr. W. H. Perkin, sen., Ph.D., LL.D., F.R.S.

* * *

The University of Liverpool has conferred the honorary degree of LL.D. upon Lord Derby, the Chancellor.

* * *

The University of Aberdeen has conferred the honorary degree of LL.D. on Mr. C. T. Ritchie, M.P., Lord Rector; Mr. Robert George Elsmie, C.S.I.; and Dr. Wyndham R. Dunstan, M.A., F.R.S., V.P.C.S., Director of the Imperial Institute.

* * *

Bowdoin College has conferred the honorary degree of Doctor of Literature on Mrs. Kate Douglas Wiggin, the well known American author.

* * *

On the occasion of the visit of the British Medical Association to Oxford the honorary degree of D.Sc. will be conferred upon Prof. Clifford Allbutt, F.R.S., Mr. Andrew Clark, F.R.C.S., Dr. T. D. Griffiths, Mr. Jonathan Hutchinson, F.R.S., Sir William Macewen, F.R.S., Sir Patrick Manson, F.R.S., Sir J. W. Moore, M.D., Dr. William Osler, F.R.S. (Johns Hopkins University), and Dr. T. G. Roddick, M.P. (Canada).

* * *

The Dean of Ely (Dr. Stubbs) and Principal Griffiths (Cardiff) have been elected Honorary Fellows of Sidney Sussex College, Cambridge.

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PROF. J. MORRIS JONES, M.A., of Bangor University College, has been elected to a supernumerary research fellowship at Jesus College, Oxford, where formerly he was a scholar. There is more than compliment in this: there is encouragement to Prof. Jones to complete an exhaustive Grammar of the Welsh Language, on which he has long been engaged.

* * *

THE KING has granted permission to Mr. G. W. Smith, English Professor in the Nobles' School, Tokio, to accept and wear the insignia of the fifth class of the Order of the Sacred Treasure, conferred upon him by the Emperor of Japan in recognition of valuable services rendered by him to His Majesty.

Endowments and Benefactions.

THE BISHOP OF WINCHESTER appeals for £30,000 to form a fund to assist the managers of Church schools in the diocese to meet the demands of the Educational Authorities for improvements and repairs to school buildings.

* * *

AN anonymous donor has promised £10,000 to found a Chair of English Language in the University of Liverpool.

* * *

THE firm of Sir W. G. Armstrong, Whitworth, & Co., Elswick, will contribute £1,000 a year for five years to the Newcastle College of Science.

* * *

SIR FREDERICK MAPPIN, M.P., being "an old man, with uncertain health," and anxious not "to place his trustees in a difficulty," has paid over the £5,000 he had promised to the Endowment Fund of the proposed University of Sheffield on the grant of a charter.

* * *

THE Goldsmiths' Company have generously provided £5,000 to enable London University to carry on the Institute at New Cross during 1904–5.

* * *

GEORGE HERIOT'S TRUST, Edinburgh, has received from an anonymous donor £200 to found prizes in the trade classes of Building Construction, Carpentry and Joiner Work, Masonry and Brick Work, Drawing, and Sanitary Science; and in the commercial classes.

Scholarship.

AT Hartley University College, Southampton, a scholarship has been established in memory of the late Mr. T. G. Rooper, H.M.I.S. It will be worth £24 a year, and will be first awarded, by competition, in September.

Appointments and Vacancies.

PROF. WALTER RALEIGH, who has held the Chair of English Language and Literature in Glasgow University since 1900, has been appointed Professor of English Literature in the University of Oxford. He has also been elected a Fellow of Magdalen.

* * *

IN the University of London, Dr. Edward Westermarck, formerly Lecturer on Sociology in the University of Finland, Helsingfors, has been appointed University Lecturer in Sociology (in connexion with the Martin White benefaction); Mr. W. Legge Symes, M.R.C.S., University Demonstrator in Physiology; and Miss Beatrice Edgell, Ph.D., M.A., Demonstrator in Experimental Psychology.

* * *

AT King's College, London, Sir Walter C. Hillier, K.C.M.G., has been appointed Professor of Colloquial and Documentary Chinese, to act conjointly with Sir Robert K. Douglas, Professor of Literary Chinese; Mr. J. K. Fotheringham, M.A. of Merton College, Oxford, Lecturer in Classical Literature; the Rev. C. H. W. Johns, M.A. Queens' College, Cambridge, Lecturer in Assyriology; Mr. Arthur Stratton, A.R.I.B.A., Lecturer, and Mr. R. P. Jones, M.A., Assistant Lecturer, in the division of Architecture; Mr. Harold A. Wilson, B.A., D.Sc., Senior Lecturer, and Mr. S. C. Laws, B.A., B.Sc., Junior Lecturer, in Physics; and the Rev. F. J. Inskip, M.A., has been appointed to give a special course of lectures in Pastoral Theology next session.

* * *

AT Birmingham University, Señor Fernando de Arteaga y Pereira, graduate of Madrid University and Hon. M.A. Oxon., Taylorian Teacher of Spanish at Oxford (an office he will continue to hold), has been appointed Lecturer in Spanish and Italian; Mr. Frank Tillyard, B.A. Oxon., Barrister-at-Law, Lecturer in Commercial Law; Mr. Guy Ricketts, M.A. Cantab., Assoc. R.S.M., Assistant Lecturer and Demonstrator in Metallurgy; Mr. John H. Watson, M.B., B.S., F.R.C.S., Second Demonstrator in Anatomy; and Mr. Edmund S. Millar, Student Demonstrator in Brewing.

Prof. E. B. Poulton, F.R.S., has been invited to accept the Huxley Lectureship for 1905, and Dr. James Kerr, medical officer to the London School Board, the Ingleby Lectureship for the same year.

* * *

MR. C. H. RILEY, of King's College, London, succeeds Prof. Simpson in the Chair of Architecture in Liverpool University.

* * *

IN the University of Glasgow, Mr. A. H. Charteris, LL.D., has been appointed Lecturer in Public and Private International Law, in succession to the late Mr. W. Galbraith Miller; and Mr. James A. M'Callum, M.A., LL.B., Lecturer in Jurisprudence.

* * *

AT South Wales University College, Mr. D. G. Taylor, M.A., has been appointed Assistant Lecturer in Mathematics; Dr. R. D. Abell, D.Sc., Administrator and Assistant Lecturer in Chemistry; Mr. J. H. Shaxby, B.Sc., Administrator and Assistant Lecturer in Physics; Mr. F. W. Lamb, B.A., M.D., Administrator and Assistant Lecturer in Physiology; Miss Mary E. Phillips, B.Sc., Administrator and Assistant Lecturer in Botany.

* * *

PROF. W. CARLETON WILLIAMS has resigned the Firth Chair of Chemistry in University College, Sheffield, which he has held for twenty-one years.

* * *

THE following appointments have been made at the new Agricultural College, Aberdeen:—Mr. R. B. Greig, to be Lecturer on Agriculture, Economic Science, and Engineering Field Work; Mr. James Hendrick, to be Lecturer on Agricultural Chemistry; Mr. J. M'Lauchlan Young, to be Lecturer on Veterinary Hygiene; and Prof. James Trail, to be Lecturer on Botany and Zoology. Mr. W. M. Findlay, Mr. T. H. Gibson, Mr. Profeit, M.A., B.Sc. (Agr.), and Mr. W. A. Davie, B.Sc. (Agr.), have been appointed departmental assistants.

* * *

MISS MARGARET ALFORD, Lecturer at Girton College and at Westfield College, has been appointed Lecturer in Latin at Bedford College for Women (University of London).

* * *

MISS S. MARJERY FRY, Librarian of Somerville College, Oxford, daughter of Sir Edward Fry (late Lord Justice), has been appointed Warden of the new hall of residence for women students at Birmingham University.

* * *

MR. J. MILLINGTON SING, M.A., has been appointed Warden of St. Edward's School, Oxford, in succession to the Rev. T. W. Hudson. Mr. Sing has been an assistant master in the school since 1886.

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THE REV. H. A. RHODES, M.A., of Christ's Hospital School, Horsham, has been appointed Head Master of St. Saviour's College, Ardingley, in succession to the Rev. F. H. Hilton, M.A.

* * *

MR. F. H. HAYWARD, D.Lit., B.Sc., has been appointed Principal of the new Pupil-Teacher Centre for Torquay and district.

* * *

THE REV. R. W. MENNEER, M.A., Head Master of Bovey Tracey School (Devon), has been appointed Head Master of Newton College.

* * *

Mr. JOHN ALISON, Rector of the United Free Church Training College, Glasgow, has been appointed Head Master of George Watson's College for Boys, in succession to Mr. Carrie.

* * *

Mr. HENRY T. WYSE, art master, Arbroath High School, has been appointed art master in the Edinburgh Ladies' College.

* * *

MR. ROBERT H. MASSON, M.A. (Aberd.), has been appointed Principal of Aliwal North School, in Cape Colony.

Literary Items.

THE first volume of Prof. G. G. Ramsay's "Latin Prose Composition" will be published immediately by the Oxford University Press in three small volumes. The first part will contain the earlier exercises, the second will form a second year's course, and the third will consist of syntax and an appendix. Considerable additions have been made to Parts I. and II., new passages for translation into Latin prose being given.

* * *

MR. HENRY FROWDE announces a new series of "Standard Oxford Editions" of English works in poetry and prose —"The Florin Series," each volume being priced at 2s. Four volumes are now ready, and eight more will be completed by September. The get-up is liberal and tasteful.

* * *

MESSRS. SMITH, ELDER, & CO. will soon issue a collection of "Errata" in "The Dictionary of National Biography," compiled by Mr. Sidney Lee—in two forms, either bound or in sheets (suitable for insertion in the various volumes). Mrs. Murray Smith intends to present copies to such subscribers as apply for them.

* * *

MESSRS. METHUEN announce a new sixpenny series of reprints, "containing both books of classical repute which are accessible in various forms and also some rarer books of which no satisfactory edition at a moderate price is in existence," under the title of "Methuen's Universal Library," edited by Sidney Lee.

* * *

MR. HEINEMANN announces a new series of reprints under the title of "Heinemann's Favourite Classics," in sixpenny cloth volumes—convenient size, large print, special paper, flexible but durable binding, a photogravure frontispiece plate, a pure text, and introductions by the first critics of the day. The series begins with "The Works of Shakespeare," each play forming one volume.

* * *

MESSRS. P. S. KING & CO. announce a considerable volume of "Select Documents illustrating the History of the Middle Ages and Modern Times," by Dr. Emil Reich. The collection forms the basis of the relative parts of the author's "General History," which is to appear in two volumes towards the end of the year.

* * *

CLASSICAL readers will be interested in four excellent papers in the July *Monthly Review:* Mr. J. W. Mackail's address to the Classical Association on "The Place of Latin and Greek in Human Life"; Admiral Sir Cyprian Bridge's article on "Classical Education and the Navy"; and two accounts of recent excavations—at Carthage (by Miss Mabel Moore), and in Ægina (by Baroness Augusta von Schneider).

* * *

HISTORICAL readers will find the Hon. Bertrand Russell's paper "On History" in the *Independent Review* for July piquantly suggestive. "Of all the studies by which men acquire citizenship of the intellectual commonwealth no single one is so indispensable as the study of the past."

* * *

THE "Technological Scientific Dictionary," edited by G. F. Goodchild, B.A., and C. F. Tweney, is making steady and solid progress. Part III. brings it down to "Electric Lighting" (1s. net, Newnes).

* * *

MR. EDWARD ARNOLD has removed from 37 Bedford Street, Strand, to new premises at 41 and 43 Maddox Street, a few doors from Bond Street.

General.

THE Board of Education have issued an Order naming October 1 the appointed day for the purposes of such portion of the London Education Act as did not come into operation on May 1.

* * *

THE Board of Education have published "Regulations for the Instruction and Training of Pupil-Teachers" (August 1, 1904, to July 31, 1905), with prefatory memorandum (Cd. 2140, 2½d.); and "Syllabus for the Examination of Candidates for Admission as Pupil-Teachers, 1905." Also a Circular to H.M. Inspectors on "certain questions which have recently arisen as to the approval of time-tables in voluntary schools in respect of the allotment of a portion of the school hours to religious instruction, as to the practice of taking children to church during school hours, and incidentally as to the time or times for the marking of the registers." Attendance at church (with special exceptions) is not attendance at school.

* * *

THE University of Aberdeen has fined six of the Alake's aggressors £10 each, and one £5, "the fines to be devoted to some charitable object." "The names of the delinquents are not to be divulged"! Further investigations are being conducted. A very melancholy business!

* * *

A NEW science degree in Agriculture—D.Sc.(Agr.)—has been established in the University of Aberdeen.

* * *

THE CHEVALIER LONDINI, D.C.L., Registrar of the University College, Liverpool, since 1881, has become Bursar of the Liverpool University. In recognition of his services as Registrar, the University Association entertained him at dinner (July 1), and presented him with a purse and an illuminated address (in Prof. Strong's best Latin).

* * *

THE Oxford Local Examinations last month were held at 262 centres—an increase of 51 centres in comparison with last year. In each division there is a large increase, the Seniors rising from 2,757 to 3,293, the Juniors from 6,059 to 6,838, and the Preliminary from 4,113 to 4,340.

* * *

THE average attendance in the L.C.C. schools during the year ended March 25, 1904, was 485,343—an increase of 10,193 on the preceding year. It is proposed that the staff be augmented by 105 assistants, 33 ex-pupil-teachers, 12 senior pupil-teachers, and 18 junior pupil-teachers.

* * *

YET another universal language! This time an adaptation of Latin without, or almost without, inflexions. The inventor is Prof. Peano, of Turin.

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A QUATRAIN that went the rounds when Dr. Hayman was suspended has been revived on his death:

When Rugby, spite of priest and layman,
Was falling fast away,
The Governors suspended Ha(y)man
For fear of more decay (Mordecai).

* * *

THE University of Paris (says the Paris correspondent of the *Times*) has placed at the disposal of ten students, five from the Faculty of Letters and five from the Faculty of Law, the sum of 350 fr. each in order to enable them to attend the summer vacation courses at London University for instruction in the English language.

* * *

A MEDALLION in honour of the late Sir G. G. Stokes, executed by Mr. Hamo Thornycroft, was unveiled in Westminster Abbey (July 7).

* * *

A COMMITTEE has been formed at Manchester University to procure portraits of Prof. Osborne Reynolds, LL.D., F.R.S., and Prof. A. S. Wilkins, Litt.D., LL.D., as memorials of their connexion with Owens College.

COLLEGE OF PRECEPTORS.

HALF-YEARLY GENERAL MEETING.

THE ordinary half-yearly General Meeting of the Members of the Corporation was held at the College on Saturday, July 23.

The SECRETARY having read the advertisement convening the meeting, Dr. WORMELL was appointed Chairman.

The Report of the Council was laid before the meeting, and was taken as read, a copy having previously been sent to every member. It was as follows:—

REPORT OF THE COUNCIL.

THE Council beg to lay the following Report of their proceedings for the past half-year before the members of the College:—

1. They have to report that the number of candidates entered for the Midsummer Examination for Certificates is about 4,430, while the number of entries for the Lower Forms Examination is about 1,340. These figures show an increase of about 240 as compared with the entries for the corresponding Examinations last year.

2. The Professional Preliminary Examination for intending Medical Students and others was held, as usual, in the first week in March, and was attended by 344 candidates, an increase of 42 as compared with the previous March Examination.

3. During the past half-year, the Diploma of Fellow has been conferred on one candidate, that of Licentiate on 27, and that of Associate on 165, who had passed the required examinations. The next Examination for Diplomas will be held in the first week in September, which will, it is considered, be a more convenient date for candidates than July.

4. In compliance with the request of the Teachers' Registration Council, the Council of the College have undertaken on behalf of the Registration Council the testing of the teaching capacity of applicants for registration under the ten years rule [Reg. 5 (2) (*b*) of the Order in Council], and 20 teachers have been examined accordingly.

5. The Council have conducted during the past half-year the Examination of 5 Schools by Visiting Examiners.

6. The Thirty-third Annual Series of Lectures to Teachers on "The Science and Art of Education" commenced on the 25th of February with a Course of Twelve Lectures on "The Psychological and Logical Foundations of Intellectual Education," by Mr. W. E. Johnson, M.A.; and a Course of Twelve Lectures on "Practical Applications of the Art of Teaching" will be given in the Autumn by Prof. J. Adams, M.A., B.Sc., F.C.P.

7. At the Members' Meetings held during the past half-year, the following Lectures have been given:—"On the Teaching of the Mother Tongue," by Prof. J. W. Adamson, B.A.; "How to be Interesting in Teaching," by Prof. J. Adams, M.A.; "On the Part played by Books in the Education of the Individual," by H. C. Bowen, M.A. At the Meeting in May, Mr. W. C. Brown, M.A., and Mr. R. J. Shankland gave practical demonstrations of the Teaching of Elementary German and of French Reading. At another Meeting (arranged for in conjunction with the Assistant Masters' Association) Dr. Emil Reich delivered a Lecture on "The Introduction of the Study of General History into Secondary Schools." Reports of the Lectures and Demonstrations have been published, as usual, in *The Educational Times*.

8. The Council desire to call the attention of the members of the College to a movement for the federation of Associations of Secondary Teachers, which has been initiated outside the College, and has recently assumed definite shape. Proposals for federation, which provide for the reconstitution of the College and the incorporation with it of various educational Associations, have been laid before the Council, and it is hoped that they may afford a basis for a comprehensive union of secondary teachers, and result in a further development of the objects for which the College was founded. These proposals have been submitted to the Council, who have decided that, taken as a whole, they deserve their favourable consideration. They have not yet been discussed in detail, but a Committee has been appointed for that purpose, and the results of their deliberations, if approved by the Council, will as soon as possible be submitted to the consideration of a Special General Meeting of the members of the College.

9. The Council have had under their consideration the question of substituting electricity for gas as the means of lighting the College building. They have made careful enquiries, and have come to the conclusion that under the most improved methods of incandescent gas-lighting an equal illuminating power can be secured at a considerably less annual cost than that of electric light. Having regard to this and to the large initial outlay involved in the installation of electric light, they have decided to adopt incandescent gas fittings throughout the building. They have also decided to carry out extensive decorative repairs and to improve the ventilation of the lecture hall.

10. During the past half-year, 30 new members have been elected, and notice has been received of the withdrawal of eight. The Council regret to have to report the death of the following members:—The Rev. Canon Daniel, F.C.P. (formerly one of the Vice-Presidents), J. Eley, J. King, T. Margerison, A.C.P., and W. Wood, A.C.P.

Mr. GUTTERIDGE asked whether any further information could be afforded as to the action of the Consultative Committee with regard to School-leaving Certificates.

Mr. PINCHES said the Consultative Committee had spent more than twelve months in taking evidence, and in preparing a report which had been referred by the Board of Education to a number of educational authorities for the purpose of eliciting expert opinion on the recommendations of the Committee. The College was one of the bodies which had been requested to express their opinions on the matter, and the subject was brought under the notice of the Council at their meeting that day. The question would be fully considered after the holidays, and the views of the Council would be submitted to the Board of Education in due time.

With reference to paragraph 4, Mr. GUTTERIDGE said it was satisfactory to note that the College had been included among the bodies recognized for the testing of applicants for registration under Reg. 5 (2) (*b*); but he desired to call attention to the fact that the Register was virtually limited to teachers in schools, and that university professors and teachers of special subjects, as well as private tutors and governesses, were at present only admissible under the ten years rule. He hoped that when the rules for the supplemental registers came to be considered this anomaly would be removed.

With reference to paragraph 8, the CHAIRMAN remarked that the question raised in this paragraph was certainly of very great importance, but he doubted whether the time had yet arrived for properly considering it. The question of the federation of associations of secondary teachers had first been mooted outside the College, and it had been represented by the originators that the influence of the College might be largely increased if the College lent its assistance to carry out the scheme. The Council could not but listen to proposals which had for their object the increase of the influence of the College; it was their duty to examine and criticize these proposals, and if they thought favourably of them to report to the members. A committee had been appointed to examine the details, and when the paragraph was drafted it was thought that such progress might have been made with the inquiry as would admit of an outline of the scheme being submitted to this meeting. Unfortunately, however, the Dean, who was the chairman of the committee, had been taken seriously ill, and was unable to attend to business, so that little more than a beginning had been made. Under the circumstances he would suggest that it would be premature to take the very meagre information in the report as a ground for discussion, and that the matter had better be left for consideration by the next General Meeting or by a Special General Meeting which might be convened when the question had been examined by the Council in all its bearings, and definite conclusions on it had been come to.

The Report of the Council was then adopted.

In the absence of the Dean, the TREASURER then presented the Dean's Report, which was as follows:—

THE DEAN'S REPORT.

IN addition to the general statement of the examination work of the College during the past half-year, which has been embodied in the Re-

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port of the Council, I have now to submit to you, in detail, the statistics and results of the various examinations.

The Midsummer Examination of candidates for Certificates took place on the 28th June to the 2nd July at 162 Local Centres and Schools. In the United Kingdom the Examination was held at the following places:—Abingdon, Anerley, Arnside, Aylesbury, Bangor, Bath, Belfast, Birmingham, Blackburn, Blackpool, Boston Spa, Brecon, Brewood, Brighton, Bristol, Broxbourne, Bruff, Camelford, Cardiff, Carlisle, Carnarvon, Cheltenham, Cheshunt, Coleraine, Croydon, Douglas (Isle of Man), Dublin, Dumfries, Durham, Ealing, East Grinstead, Eccles, Edinburgh, Epsom, Exeter, Eye (Suffolk), Falmouth, Faversham, Felixstowe, Forest Hill, Fraserburgh, Goudhurst, Greenwich, Grimsby, Hanley Castle, Harpenden, Hastings, Hatfield (Herts.), Hawkhurst, Hexham, Hornsea, Horsmonden, Huddersfield, Hunstanton, Hutton (Preston), Hythe, Inverurie, Ipswich, Iron Bridge, Kirkby Stephen, Lampeter, Launceston, Leamington Spa, Leeds, Lisburn, Liskeard, Liverpool, London, Long Sutton, Ludlow, Maldon, Malvern, Malvern Link, Manchester, Margate, Market Bosworth, Market Harborough, Marlow, Mayfield, Merthyr Tydfil, Middlesbrough, Mountmellick, Muswell Hill, Newcastle-on-Tyne, Newtownards, Northwich, Nottingham, Oswestry, Paisley, Pencader, Plymouth, Porthcawl, Portsea, Portsmouth, Ramsgate, Richmond (Surrey), Richmond (Yorks), Ripley (Surrey), Rochester, Ruabon, Ruthin, Rye, St. Asaph, St. Leonards-on-Sea, Sevenoaks, Shebbear, Sheffield, Snettisham, Southampton, Southend, Southport, Southwell, Stamford Hill, Stonyhurst, Stroud, Sunderland, Taplow, Taunton, Tavistock, Tenby, Tettenhall, Thorne, Tonbridge, Tunbridge Wells, Uckfield, Warrington, Waterford, Westcliff-on-Sea, West Hartlepool, West Norwood, Weston-super-Mare, Weybridge, Wirksworth, Wisbech, Woodstock, Worthing, York, Youghal. The Examination was also held at Lagos, Gibraltar, Johannesburg, Chefoo (N. China), Constantinople, Ghent, and Namur.

The total number of candidates examined (not including candidates examined at Chefoo, Johannesburg, and Lagos) was 4269—2919 boys and 1350 girls.

Taking the Christmas and Midsummer Examinations together, the total number of candidates examined during the year ending Midsummer, 1904 (not including those who attended the supplementary examinations in March and September), has been 10591.

The following table shows the proportion of the candidates at the recent Midsummer Examination who passed in the class for which they were entered:—

	Examined.	Passed.	Percentage.
First Class [or Senior].....	461	225	49
Second Class [or Junior]...	1781	894	50
Third Class	1775	1429	81

The above table does not take account of those candidates who obtained Certificates of a lower class than that for which they were entered, nor of those (252 in number) who entered for certain subjects required for professional preliminary purposes.

The number of candidates entered for the Lower Forms Examination was 1315—717 boys and 598 girls. Of these 973 passed, or 74 per cent.

At the Professional Preliminary Examination for First and Second Class Certificates, which was held on the 1st to 3rd of March, in London and at seven Provincial Centres, viz., Birmingham, Bristol, Cardiff, Fraserburgh, Leeds, Liverpool, and Manchester, 344 candidates presented themselves.

Practical Examinations for Certificates of Ability to Teach were held in February, May, and June. At these Examinations 25 candidates presented themselves, and 23 were successful.

The Report was adopted.

Mr. RULE said he thought it would be appropriate for the meeting to express its regret at the illness of the Dean, and the earnest hope that he might soon be restored to health and strength.

The proposal was unanimously agreed to.

The CHAIRMAN then called upon the Treasurer to propose the following resolution, standing in the name of the Council:—

> That the following words be substituted for par. 1, Section I., of the By-laws: "All persons whose names are on Column B of the Teachers' Register, and all others who are engaged in education and have passed an examination satisfactory to the Council, are admissible as members of the College of Preceptors.

Mr. PINCHES said the effect of the substitution would be to render eligible for membership of the College persons who had not passed an examination but whose names were on Column B of the Teachers' Register, and who were therefore recognized as persons possessing ability to teach. When the Order in Council first appeared, more than two years ago, it was seen that after a certain time it would be necessary that all persons desiring to come on the Register should give evidence of having passed an examination of higher standard than the lowest of those at present required for the membership qualification. It was also found that under clause 4 certain persons might come on the Register without possessing one or other of the specified examination qualifications—*e.g.*, heads of schools which were recognized by the Board of Education. The matter was discussed in that room twelve months ago, when attention was called to the hardship entailed on teachers who were not heads of schools, who had been engaged in teaching for a great number of years, and had undoubtedly shown professional skill. The members were then told that the Council had not overlooked the matter, and that they had made a representation to the Board of Education, and that other bodies had done the same. The result was the issue of a modification of the Order in Council by the introduction of a clause known as Reg. 5 (2) (*b*), according to which persons who had been engaged in teaching for at least ten years and were in a position to give satisfactory evidence of ability to teach could have their names placed on Column B. The duty of ascertaining the applicants' fitness was performed by the Registration Council in no perfunctory manner, and in cases where the evidence was not considered satisfactory the testing of the candidates' ability to teach was referred to a recognized examining body such as this College, and on the result of the test depended admission to the Register. It would be seen that, under these circumstances it was unlikely that persons who had not the essential qualities for teaching could come on the Register, and the Council of the College considered that it would hardly be reasonable to refuse admission to their membership to those who had been teaching for many years and had shown their capacity.

In answer to Dr. BELL, Mr. PINCHES said that applicants for admission to membership under the proposed new by-law would, of course, have to comply with the conditions which other members had to satisfy, including the payment of the annual subscription.

The resolution was carried unanimously.

Mr. GUTTERIDGE then moved the following resolution:—

> That it would be in accordance with the well-established custom of other corporations and societies, if printed lists of the attendances of members of the Council, both at Council and Committee meetings, were circulated in the hall for the general convenience of members at the January General Meeting.

He called attention to what had taken place on two previous occasions when a similar resolution had been brought forward, and which showed a growing opinion in favour of it. He knew that there was a pretty general disinclination to continue to re-elect from time to time members of the Council who showed by the infrequency of their attendance a want of interest in the affairs of the College. He could appreciate the reasons there were for keeping on the Council certain members who could not attend regularly, and that allowance should be made for members residing at a distance from London. The resolution would, he believed, strengthen the hands of the Council. He gave instances of the practice of other bodies in regard to the publication of attendances.

Mr. RULE doubted how far the resolution, if carried, would be operative. He himself saw no reason why the attendances should not be published, but he thought that further information was required if no injustice was to be done to individual members of the Council.

Dr. BELL said he had had considerable experience of this matter in the case of vestry meetings where a similar resolution had been brought forward, but it had always been found impossible to carry the desired object into effect. The value of a man could not be estimated simply by the number of his attendances, and, if the resolution were carried, he was convinced that it would be found to be unworkable.

Dr. MOODY said that he was unable to vote for the resolution, as he did not consider it to be in accordance with the established custom of societies like the College to publish such a list. Moreover, it was unnecessary, for if any one wished to know the number of attendances made by individual members of the Council the information could always be obtained from the reports of the meetings which were published in *The Educational Times*.

The resolution was then put to the meeting, and declared to be carried.

A vote of thanks to the Chairman concluded the proceedings.

ADJOURNED MEETING OF THE COUNCIL.

AN adjourned meeting of the Council was held on July 23. Present: Dr. Wormell, Vice-President, in the Chair; Rev. J. O. Bevan, Rev. J. B. Blomfield, Dr. Breul, Mr. Butler, Miss Crookshank, Miss Dawes, Rev. R. Lee, Mr. Pinches, Miss Punnett, Mr. Starbuck, and Mr. Vincent.

The Secretary reported that, owing to the illness of the Dean, it

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had been found necessary to interrupt the meetings of the Joint Conference Committee appointed to consider the proposals for federation.

He submitted the report of the Consultative Committee on the question of School-leaving Certificates, on which the opinion of the Council had been invited, and it was decided that the consideration of the proposals should be deferred till the September meeting.

COLLEGE OF PRECEPTORS.

PRACTICAL EXAMINATIONS FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a list of successful candidates at the Examinations held in May and June, 1904:—

MAY.

Class I.

Butcher, F. E.
Cahill, Miss M.

Class II.

Arnold, Miss E. J.
Bandulska, Miss H.
Blunt, J. H.
Bridge, P. S. R.
Irvine, J. B.
Jones, M.
Lock, Miss A. J.
Vincent, Miss V. E.

JUNE.

Class I.

Moffatt, Miss E.

Class II.

Semmens, W. H.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

THE PUFF EDUCATIONAL.

To the Editor of "The Educational Times."

SIR,—On Wednesday, the 15th inst., honour was done—and rightly done, too—by the Manchester University to a distinguished German Professor of Education. But can anything justify the extraordinary deviation from—let me say—accuracy which marked the opening proceedings of that meeting, in which Prof. Rein was described as being "throughout the English speaking world," by "his writings and his *personality*, a power for good"? Feeling somewhat surprised at this statement in regard to the "English-speaking world," I took the first opportunity of inquiring of several English teachers, graduates and others, what they knew about Prof. Rein. In neither instance did they know anything of him, excepting that they had just heard of him through the Manchester newspapers. I then called on several of our local leading school and schoolmaster booksellers. Only one of them had previously heard of his name, did not keep his books in stock, and had to refer to London catalogues to ascertain the titles of his works and which of them had been translated into English. I also looked cursorily through several recent volumes of our leading educational journals, seeking—in vain—either to find the name of Prof. Rein or evidence of his great influence over the "English-speaking race." What can be the object of such a misleading mode of announcement? Prof. Rein's chief work, as I understand it, consists in his able advocacy and exposition of Herbartianism. The two leading principles of this system of education, as laid down by Prof. Herbart, are his insistence on morals as a fundamental part of real education and his insistence on what he termed the "many-sided interest" principle of education. But the late George Combe treats these subject-matters with even greater force and lucidity, and from a more pracictal and philosophical standpoint, than did Prof. Herbart. The Right Honourable John Morley, M.P., in his "Life of Richard Cobden," speaks of George Combe's "Constitution of Man" as "that memorable book," and "as a startling revelation when published" (1828). George Combe, probably more than any other modern writer, contributed to the practical development, on a natural, scientific, and philosophical basis, of the true modern theory and practice of education in England; yet how few of the teachers so mechanically and academically trained in our present schools and Universities could give his history, either who he was or what he did or wrote! Yet probably no candidate, man or woman, who has passed one of our formal secondary-school teachers' examinations in "Theory and Practice of Education" but can tell you all about that naughty old man Jean Jacques Rousseau.—Yours faithfully,

JOHN ANGELL, F.I.C., F.C.S.

Manchester, *June* 21, 1904.

[Unavoidably held over last month.—ED. *E.T.*]

LONDON UNIVERSITY EXAMINATION PAPERS.

To the Editor of "The Educational Times."

SIR,—A candidate whom I have prepared in mathematics for the Intermediate Science Examination of the London University now being held writes me that she failed to prove. as asked, that "the tangents to the circle $x^2+y^2-2x-4y=0$ from (3, 4) are given by $x-4y+13=\pm\sqrt{15}(y-4)$."

Now the tangents from (3, 4) are not given by this equation, but by $x+4y-19=\pm\sqrt{15}(y-4)$.

If after mathematical papers have been set by one examiner a second would read them through and calculate afresh any problem in which a mistake might occur, errors like the above might surely be avoided.—I am, &c., W. P. GOUDIE.

Irvine House, Derby,
July 16, 1904.

REVIEWS.

COMPARATIVE POLITICS.

Outlines of Comparative Politics. By B. E. Hammond, University Lecturer in History, Cambridge. (7s. 6d. Rivingtons.)

The volume takes its impulse from the seminal period of Seeley and Henry Sidgwick, but it has been worked out in detail with thorough independence and with patient industry. It contains the outline of the author's lectures during half a generation, and "is intended to serve as a text-book for beginners in comparative politics." The chief fault we are inclined to find with it is that Mr. Hammond has imposed on himself somewhat severe restrictions. The text implies a wide knowledge of history—and often a deep knowledge—either gained beforehand or else supplied by the teacher concomitantly with his prelection; and occasionally the author contents himself with an indication where one would expect an exposition. However, it is only the impatient class of reader that will make much difficulty about this, and Mr. Hammond may one day provide a remedy by filling out his chapters at the more compressed points. The work, if somewhat over-refined, is markedly careful and well weighed throughout, and it will be welcomed as an instructive and cautious guide in tangled paths.

Mr. Hammond, in the meantime, gives up the question of the origin of political communities and their governments. He does not derive trustworthy assistance from the attempts that have been made to solve it from observation of ancient customs embedded in the institutions of peoples that have later attained to various degrees of civilization. In an appendix he handles Maine's researches and conclusions so far as they bear on the origin or form of governments, but much more tenderly than McLennan—who, by the way, is not among his references. "Some kind of subjection of adult sons to their fathers"—this, though apparently a concession to Maine, is really a rejection of his theory; and examples are to be found nearer home than India or Slavonic Russia, without trace of Maine's distinctive requirements. However, Mr. Hammond gets away from Maine on the German side; for the Germans had no such *patria potestas* as the Romans, and therefore among them there was no patriarchal origin of government, and yet "the chief States of mediæval and modern times were founded by Germans." And, "if so much is established," says Mr. Hammond, "I do not care to discuss origins of government in other States." At the same time, a tentative examination of the subject would be a useful introduction to a second edition of the volume.

Mr. Hammond first deals with Tribes, or "small societies of men bound together by kinship, by religion, and by interest"—simple, undivided societies: poor, rich, aggressive, and federated. Then with Cities: "A tribe grew into a city by concentrating itself within walls"—at maturity "the most compact and in-

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divisible States known to history"—the great examples in ancient times being Athens and Rome; and here Mr. Warde Fowler's admirable volume on the City-State should be studied in connexion. Mr. Hammond shows how these simple communities—tribes and cities—all conform to a few definite types, each type having its organ of government constituted in a certain way peculiar to itself. This regularity, he thinks, "seems to prove that their development is controlled by natural laws rather than by man's contrivance, and that in some way or other each simple State has its government allotted to it by Nature." There is something hard in the saying, and perhaps a firmer analysis needs to be applied. However, that is a deeper process, and in any case the results will not affect Mr. Hammond's classification and exposition. Next come Composite States, including "(1) unions of cities such as that which formed the Roman Republic, (2) unions of small and similar rural communities such as those which made the mediæval kingdoms, (3) unions of unlike peoples such as constituted the Roman Empire of Charlemagne, and lastly (4) those unions made by voluntary consent which are known as federal States." These do not conform to a few defined types, but seem capable of indefinite variation; yet there are some similar groups among the heterogeneous empires and the federal States. The differences arising from artificial construction (conquest or otherwise) and from natural growth are specially instructive. The outline of subjects will at once suggest how wide a field the volume covers and how difficult the treatment must be. Mr. Hammond has met the difficulties by assiduous and patient study, and his work will be extremely helpful to all students of this branch of historical-scientific investigation.

A Preliminary Ethical Survey.

An Introductory Study of Ethics. By Warner Fite. 6s. (Longmans.)

The volume is introductory in the best sense: that is to say, it handles the subject from the point of view of the educated man without undue technicality of statement or of method, and yet with full regard to the requirements of science. It embodies a discussion that will be extremely valuable to students entering upon ethical study, and it will not fail to interest such as are already familiar with ethical problems. Having explained the scope and method of ethics, and reviewed in outline the ethical problem, Mr. Fite finds that "there appears to be a contradiction between moral ideals and the conditions of practical attainment," and that "an emphasis laid upon the side of ideals or of conditions gives rise respectively to the theories of Idealism and Hedonism." Accordingly, he subjects these theories to a critical analysis, which occupies the main portion of the work, with this result: "Our analysis of the two theories has shown them to be the expressions of fundamentally opposite ways of looking at things—of fundamentally opposite temperaments and systems of philosophy; and our criticism has shown that, while each has a certain range of application, neither is able to fulfil all the requirements of an ethical and psychological system." "Idealism offers a relatively comprehensive but vague conception of the self and of social relations, hedonism a clear but relatively narrow conception." Mr. Fite then proceeds to attempt a co-ordination of the alternative views from some common standpoint; for it is impossible, both theoretically and practically, to rest in the mere contemplation of differences and contradictions. Yet he has to acknowledge that "a complete solution of the ethical problem is quite out of the question: we cannot fit the different sides of the problem together, term for term, and detail for detail, in such a manner as to form a completely articulated system; nor can we even, in any completely adequate manner, define a method for putting them together." All that he aspires to is the construction of "a reasonably satisfactory working hypothesis—a *critical* adjustment of the opposing theories, such as will enable us to take a practical attitude towards the aspects of life which they severally represent, without closing our eyes to the fact that we are not yet able to unite these aspects in all their concrete detail."

He examines the situation first from the metaphysical standpoint and then from the evolutionary standpoint; and he finds, first, that the conceptions of a world determined by mechanical forces, and of a world determined by reason and consciousness, are not logically contradictory, but only empirically irreconcilable, while the difficulty of bringing them together may be due only to the limitations of our human consciousness; and, next, that both ideals and conditions are but transitional aspects of the evolutionary process, and "their apparent contradiction represents the difficulty of passing from the point reached in the organization of our world to a point of further and more comprehensive organization." The difficulty, then, is probably permanent: there will always be a moral problem. But the adjustment? "It is the instability of our moral life which is the chief source both of retarded development and of unhappiness." Accordingly:

> I believe that the demands of morality will be best satisfied (remembering that morality demands both progress and happiness, and assuming that neither demand can be fully satisfied without some sacrifice of the other) by a course of behaviour regulated with a view to the maximum of sustained progress. By "sustained" progress is meant a course of progress not interrupted by periods of degeneration, in which enthusiasm does not alternate with despair, courage with cowardice. Somewhere between a futile striving after the immediately impossible and an ignoble submission to pain and difficulty, there must be a state of control in which we may keep progress toward higher ideals at a constant maximum rate of sustained efficiency. The life which maintains such control will always be the ideal life under the existing circumstances.

The value of the survey lies in the calm and open-minded treatment, in the free play of reasonable consideration around the main points of interest. The book is well thought out, and soberly and lucidly written. It is very suitable for the general reader as well as for the student.

A New Commercial Series.

Macmillan's Commercial Series.—*The Geography of Commerce.* By Spencer Trotter, M.D., Professor of Biology and Geology in Swarthmore College, Pennsylvania. (5s. net.)

The present volume is the first of a series of text-books "designed to cover ultimately the whole field of commercial education." Three other works will deal respectively with commercial products, commercial affairs, and commercial history. These four books "will serve as the backbone of the series, and the other books to be published will be articulated with them." There is no idea of springing upon the educational world anything startling: the aim is to hold fast to all that is good in experience, while seeking fresh applications and new elements of probable value. Both authors and editor are practical teachers; experimenting and planning as the work proceeds. The series looks especially to the commercial classes in "public high schools," and the present volume, at any rate, will be very useful for instruction and for guidance in fairly advanced commercial teaching on this side of the water.

The object of the volume, then, is "to describe commercial life as it is influenced and determined by geographical conditions." The author explains further:

> To understand the relations of geography and commerce, the various industries and occupations of men must be studied in the light of their dependence upon physiographic surroundings. "Physiographic," as distinct from "geographic," is taken to include the physical environment, as climate, soil, topography, and the distribution of resources. Geography, as distinct from physiography, includes not only the physical environment, but the human element as well. Geography is used in the following pages in its broad meaning, and includes an account of man and Nature, and the interactions which are an outcome of their relationship to each other. Commerce grows out of the adjustment of men to their physical environment. The study of regions, it has been well said, passes naturally into what regions produce, and, similarly, the study of men leads to what men make. Thus the geography of commerce includes what is coming to be understood as economic geography—the production and distribution of raw commodities—and industrial geography—or the location of manufactures and the distribution of their products.

After preliminary exposition of the basal considerations, the United States is treated with much fullness (133 pages)—regional geography, resources (mineral, vegetable, and animal products), internal commerce, foreign trade, and outlying possessions. Prof. Trotter points out that the export trade has sprung naturally from the home activity, and that "the demand for American goods in foreign markets is due to their cheapness and excellence." Among other factors in the growth of American commerce abroad he mentions the excellence of the consular service; from which it would appear that American manufacturers pay more attention to consular reports than their competitors in certain other countries, and notably in England, seem to do. He remarks that "the attempt to force competitors out of the market in every department of trade is of doubtful advantage: its tendency in the long run would be to destroy markets rather

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than to build them up." The rest of the countries of the world are treated much more briefly; the United Kingdom, for example, receiving a bare dozen pages. There are six inserted maps, sixteen plates, and about a hundred maps and diagrams in the text.

A New Chemistry Series.

"Text-books of Physical Chemistry."—*The Phase Rule and its Applications.* By Alex. Findlay, M.A., Ph.D., D.Sc., Lecturer and Demonstrator in Chemistry, University of Birmingham. Together with *An Introduction to the Study of Physical Chemistry*, by Sir William Ramsay, K.C.B., F.R.S. (5s.; "Introduction" separately, 1s. Longmans.)

This new series has been suggested by the wide and widening sphere of physical chemistry, and by its rapid progress—at any rate, in certain branches. Each department, or aspect, being separately expounded, can thus be frequently revised independently of others and pretty steadily kept up to date, so that "a statement of what is known on each subject" at any given period "will be made accessible to students and investigators." Undoubtedly that is a very important consideration for all persons that are likely to have recourse to such text-books. Sir William Ramsay, the editor of the series, furnishes a general "Introduction," sketching the historical evolution of the science in its various important aspects. The handling, if brief, is lucid and precise; and it opens up, without pursuing, numerous vistas of great interest. The fuller significance of the sketch will be supplied from study of the various volumes of the series.

The first volume expounds the Phase Rule, first enunciated by Prof. Willard Gibbs of Yale (1874–8), and presently shown to be practically applicable to the study of chemical equilibria by Roozeboom (1887). After sufficient preliminary explanations, Dr. Findlay handles typical systems of one "component," showing how the phase rule can be applied to the elucidation of them; and then, in succession, systems of two, three, and four components—the two-component systems most fully, the number and more especially the complexity of the others limiting the investigation to the more important classes and the more important points in connexion with the behaviour of such as are selected for description. The treatment is most careful and lucid, judiciously proportioned, and effective; and the author shows himself completely familiar with the literature of the subject, as well as with the details of experimental illustration. The volume, while presenting much not readily accessible material in a very convenient form, will not only be useful to the student, but also stimulating to the investigator. It is a most able, laborious, and opportune piece of work, and it sets a high standard to the succeeding volumes of the series. There are 118 figures in the text; paper and type are excellent, and the binding is alike tasteful and serviceable.

The Social Side of British History.

Social England. A Record of the Progress of the People in Religion, Laws, Learning, Arts, Industry, Commerce, Science, Literature, and Manners, from the Earliest Times to the Present Day. Edited by H. D. Trail, D.C.L., and J. S. Mann, M.A. Illustrated Edition. Vol. V. (14s. net. Cassell.)

The present volume of this elaborate work practically covers the eighteenth century (1714–1815)—the Georgian era of British history. The political events are adequately outlined so as to furnish a framework for the setting of the other aspects of the period, which are the main objects of the editors' care. These are enumerated in the sub-title, and they are treated in considerable fullness by scholarly specialists in the several departments. The distinctive characteristics are generally singled out and displayed with good judgment and conspicuous ability; and the style is plain, sound, and attractive. Though the period is separated from the present by so narrow a space, yet one soon gets impressed with the extraordinary advance that the nation has made in every respect—a sense of contrast of stages of historical development that is not awakened so vividly by any other record that we remember. The educational effect of the spacious narrative (nearly 900 pages) is markedly heightened by the liberality and excellence of the illustrations (over 450) and coloured plates (10), which have been laboriously selected and justly distributed among the various subjects. The work should be placed in all public and school libraries: it will clothe the dry bones of the ordinary history with ample and fair flesh, and stimulate a real historical and social interest.

GENERAL NOTICES.

CLASSICS.

Corpus Poetarum Latinorum, a se aliisque denuo recognitorum et brevi lectionum varietate instructorum edidit Iohannes Percival Postgate. Fasc. IV. (9s. net. Bell.)

The *fasciculus* contains the "Bucolica" of Calpurnius Siculus, the Tenth Book of the "Res Rustica" of Columella, the "Punica" of Silius Italicus, and the "Thebais," "Siluae," &c, of Statius—430 handsome pages in double columns, closely but clearly printed, with textual variations in footnotes. The scholars associated with Dr. Postgate are H. Schenkl, W. C. Summers, A. S. Wilkins, and G. A. Davies. The preface, written very gratuitously in Latin, explains the procedure of the editors, with full statement of the codices used. Why should Dr. Postgate trouble himself to write a page upon "nonnullorum in cauillando industria curiosa"? He has abundant precedents, no doubt, but it seems a task of supererogation. The work is plainly on the level of the best modern scholarship, every page bearing witness to assiduous care and labour.

Longmans' Latin Course. Complete Edition. (3s. 6d.)

The aim is to present simply and lucidly the essentials of Latin grammar, enforced by an adequate number of exercises, *viva voce* sections being added in the earlier stages to make sure of sufficient practice at points where practice is too often insufficient. The more prominent topics are very fully and practically handled, notably the accusative and infinitive construction. The examples are almost wholly drawn from authors that are usually read by beginners—with more or less modification; and the materials are well graduated. Devices of type are freely used for emphasis. The book embodies a serious attempt to simplify the beginner's difficulties, and indeed it promises to be very successful in doing so. It is well printed and substantially got up.

MATHEMATICS.

Euclid: His Life and System. By Thomas Smith, D.D., LL.D. (3s. 6d. T. & T. Clark.)

Mr. Oliphant Smeaton has been well advised to add this racy volume to his series of "The World's Epoch-Makers." The book "is not designed for mathematicians," though mathematicians will no doubt take interest in it. It is thoroughly popular in treatment and strikingly attractive, with a great deal of curious lore discursively interspersed. The "Life" is necessarily after the manner of the snakes in Iceland; but the "System" is very fully handled, not only directly, but in its applications in other sciences, and historically as well as scientifically. Dr. Smith stands up manfully for Euclid:—"While it is freely admitted that in the technical education of the mathematician of the future, and of all who are to be engaged professionally or otherwise in the sciences of applied mathematics, the non-Euclidean geometry must occupy a large place, we trust it shall never hold an exclusive one. The non-Euclidean is safe only in the hands of him who has drunk in the spirit of the Euclidean. The former is the motive power, potent and irresistible; the latter is the guiding principle, potent also and salutary. . . . If there are any defects in Euclid, they are in his definitions and axioms"—a round assertion more or less qualified afterwards; but substantially Dr. Smith champions Euclid, and criticizes some of his critics with much verve. A strong play of humour is always bubbling up through the severities of the subject; and this, together with the inveterate discursiveness of the author, renders the book delightful throughout. As Mr. Smeaton remarks, "it is not the least interesting feature of this volume that it has been produced after its venerated author had reached his eighty-fifth year."

Graphs and Imaginaries. By J. G. Hamilton, B.A., and F. Kettle, B.A. (1s. 6d. Edward Arnold.)

By a series of very ingenious and interesting geometrical constructions, the authors show how the principles of graphical representation may be applied to the solution of quadratic equations with *imaginary* roots, and, further, they employ similar means to make it possible to display to the eye the relations between the *imaginary* intersections of various lines and curves. The object is effected by the use of what are called *shadow* curves, whose magnitude and position are in every case perfectly definite. Interesting and instructive as the constructions which are given are in themselves, the chief value of the tiny volume lies perhaps in its suggestiveness; for more than likely it will serve to encourage fresh effort, and it may thus lead to even more important results.

Mathematical Papers for Army Classes. By H. S. Brabant, B.A. (1s. 6d.; with Answers, 2s. 6d. Relfe.)

A useful collection of problems, very many of which are of a practical character. The questions are arranged in sets suitable for examination papers of two and three hours' length, and each such series is further divided into sections capable of being utilized separately in the form of one-hour papers.

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MODERN LANGUAGES.

(1) *Aperçu comparatif des Cinq Langues Germaniques (Anglais, Allemand, Hollandais, Danois, Suédois).* (2) *Le Dano-Norvégien.* Both by J. Berjot, Professeur Agrégé de l'Université. (Paris: H. le Soudier, 174 Boulevard Saint-Germain.)

(1) The "Aperçu" is very handy for purposes of comparison. But Prof. Berjot hopes by means of it to facilitate the acquisition of the languages for practical use, primarily through private study, as apparently "l'enseignement public" cannot teach everything—not even in Germany. Now, "Selbstunterricht"—"l'enseignement par le livre et sans maître"—has developed enormously in Germany ("ce développement vraiment merveilleux"), with remarkable commercial results, and so "pourquoi donc la France ne suivrait-elle pas ici l'exemple de l'Allemagne?" Why not, indeed? Prof. Berjot's *brochure*, however, is not exactly a grammar, "mais un *précis*, assez *succinct* pour être appris en un temps relativement court, assez *complet* pour permettre à qui le possédra bien d'aborder promptement et avec fruit les exercices pratiques: traduction, correspondance commerciale, &c." It is good as far as it goes, but we confess we do not like the idea of a beginner's trying to ride five horses at once. As it is limited "au tracé des grandes lignes, à *l'ossature* générale et comparée des cinq langues," he is preparing three modest supplements—Dutch, Danish, and Swedish. Already we have one of these: (2) *Le Dano-Norvégien*, which is practically a brief grammar, giving the main points efficiently. Prof. Berjot thinks that Danish should be learnt on his method in not more than a year. To our mind, a man that cannot make his way in Danish in three months on whatever system had better leave it alone.

Rabelais. *Selections from Gargantua.* Edited by C. H. C. Wright, A.B. (Harv.), M.A. (Oxon.), Assistant Professor of French in Harvard University. (3s. 6d. Macmillan.)

The enterprise has a questionable look, but the editor has been discreetly selective, and has confined himself to the First Book. The text is based on that of Burgaud des Marets and Rathery, which is "scientifically constructed to be consistent throughout," and thereby least likely to present unnecessary difficulties of spelling to the young student. The introduction treats the pertinent literary considerations adequately and judiciously; and the notes, which are liberally reinforced from Cotgrave and Urquhart, seem to be generally helpful and sufficient. There is a "Vue de l'Abbaye de Thelème" (d'après Ch. Lenormant). An excellent edition, well printed, and in strong binding.

ENGLISH LANGUAGE.

The Making of English. By Henry Bradley, Hon. M.A. Oxon., Hon. Ph.D. Heidelberg, sometime President of the Philological Society. (4s. 6d. Macmillan.)

Dr. Bradley's object is "to give to educated readers unversed in philology some notion of the causes that have produced the excellences and defects of modern English as an instrument of expression," the history of the language being dealt with only so far as it bears on this special problem. By way of introduction, the author compares and contrasts German and English, and sets out the characteristics of Old English; then he reviews the grammar, noting the progressive simplification of accidence and the accession of some fresh grammatical material, and balancing profit and loss. The successive chapters on Foreign Importations, Word-making, Changes of Meaning, and Some Makers of English, are full of most instructive expositions of tendency, illustrative examples, and singular curiosities. The presentation is remarkably attractive both in method and in style; and, if we miss some familiar specimens as well as some unfamiliar points that seem to call now for the attention of those that can speak with acknowledged authority, yet this regret is overwhelmed by the mass of new material adduced and effectively worked up. The volume will, no doubt, grow. It is a book that will be read with avidity when the ordinary grammar is rebelliously rejected; and, if a boy get hold of it in a quiet corner, one need not seriously care about the spurned grammar—so far as concerns "the making of English." By the way, however, "English" here means merely "English vocables"; so that Dr. Bradley's phrase "Modern English as an instrument of expression" must be taken in that limited sense.

A Handbook of Modern English Metre. By Joseph B. Mayor, Hon. Litt.D. of Dublin. (2s. Cambridge University Press.)

By "Modern" Dr. Mayor means that he does not go back, except incidentally, beyond the time of Henry VIII. In eight of his eleven chapters he gives "a methodical and uncontroversial statement of the principles which are alike the foundation and the outcome of his former work on English metre"; and in the later chapters he goes on to treat of metre from the æsthetic side, and offers suggestions as to the connexion of sound and sense in poetry. Dr. Mayor holds by the theory that the foot is the unit of verse. The main point, however, is that he has provided "a clear and simple guide to metre, not hampered by the rigid rules of Pope and Johnson, but elastic enough to embrace the careless measures of the old ballads or drama, as well as the latest experiments of the twentieth century." He very properly insists on the value of training in imagination, and his exposition will be very useful not only for general students, but also in schools, and especially in schools of the more modern type where the pupils have had no practice of Greek or Latin versification. Like all Dr. Mayor's work, it is thoroughly independent, scholarly, and judicial.

HISTORY AND GEOGRAPHY READERS.

The *Senior Globe Geography Reader*, by Vincent T. Murché, F.R.G.S. (2s. 6d., Macmillan), treats of "Our World-wide Empire." "The chief aim has been to impress the young reader with a sense of the vastness, the variety, the wealth, the future prospects, and the mighty power for good that are all summed up in the three words—the British Empire; to trace the marvellous growth of these wide-spread dominions from the humblest beginnings as the result of the commercial and colonizing enterprise of our people; and to encourage in every possible way the forging of a strong and indissoluble bond of brotherhood between Britishers everywhere throughout the world." The matter (which is not unfrequently historical) is simply and attractively presented, and the book is lavishly and admirably illustrated.

Chambers's Twentieth Century Geography Readers, Books IV., V., and VI.A (1s. 6d., 1s. 6d., and 2s.), are substantial and most interesting additions to a capital series. The first covers Scotland, Ireland, British North America, and Australasia; the second, Europe; the third, the World outside Europe. They are full of good matter, well written, and liberally and judiciously illustrated. The same may be said of *Asia and Africa* (1s. 6d.) in the excellent series of "Chambers's Geographical Readers of the Continents." Many of the illustrations are in colour; and there is a useful summary at the end of each of the four volumes.

Messrs. Nelson's new series of *Excelsior History Readers* is designed to suit elementary-school classes ranging from Standard III. to Standards VI. and VII. The concentric plan is adopted. The *Junior* volume is not quite ready; but we have the other three—*Intermediate*, *Senior*, and *Advanced* (1s. 4d., 1s. 6d., 1s. 6d.). They are graduated with much care and judgment, and written in simple and lucid style. In the first two poetical pieces are appended. They are all liberally illustrated—maps, plans, portraits, &c., and they are excellently got up The series is bound to be popular.

AGRICULTURE.

The Soil: an Introduction to the Scientific Study of the Growth of Crops. By A. D. Hall, M.A. (Oxon.), Director of the Rothamsted Station. (3s. 6d. Murray.)

Agriculture is old in practice, but young in scientific method; indeed, science has not yet been able to explain fully the best farming practice. It is making rapid progress, however, and this volume will prove very instructive to farmers as well as to agricultural students, for whom it is primarily intended. It is readily intelligible to the non-technical reader. Mr. Hall examines the soil, and the part it plays in the nutrition of the plant, in chemical, physical, or mechanical and biological aspects, with a view to obtain such a knowledge of its constitution and action as will make clear the cause of the inferiority of any given piece of land, and ultimately enable the farmer to correct it. The problems are more complex than the uninitiated bargain for; but Mr. Hall makes an able and interesting contribution to the solution of them. There are sixteen figures—diagrams, photographs, &c.

The Essex Education Committee publish two *brochures* of interest to cultivators (County Technical Laboratories, Chelmsford): (1) *Agricultural Education in Essex*, being a description of the County Technical Laboratories, and prospectus of educational work carried on at or in connexion with them; and (2) *Market-Day Lectures*, being abstracts of eleven addresses delivered to farmers at the laboratories during the winter months 1903-04.

The Midland Agricultural and Dairy Institute issues several fresh Bulletins, being *Reports* (1) of Experiments with Barley; (2) of Experiments on the Manuring of Swedes; (3) on the Sand Land Rotation Trials at Carburton, Notts; and (4) on Tests of Varieties of Mangels and Swedes—all of which are instructive.

FICTION.

Angelo Bastiani: a Story of Modern Venice. By Lionel Cust. (6s. Constable.)

A tragic story, based on insensate jealousy, and worked out to its natural issues. Angelo Bastiani, a *facchino* (shore porter) of Venice, sustains a compound fracture of the leg by an accident, and during his illness his wife goes to work at a fashionable tailor's establishment, under circumstances that arouse his jealousy. A lying letter from the tradesman leads Angelo to stab him to the heart, for which he has to dree his weird for a dozen years in the galleys at Naples. All the rest of the calamity naturally follows, and its continuing operation is indicated in the second generation. In some ways the details are inevitably repellent, though handled with discretion. The treatment is sympathetic and discerning; and, if the author is not yet an expert at story-telling, he still contrives to maintain the interest of the reader. There are numerous illustrations by Frank H. Mason, R.B.A.

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Mrs. Hugh Fraser combines in a single attractive volume five tales of the Far East under the title of one of them—*The Slaking of the Sword* (6s., Methuen). They are all Japanese or Central Asian stories; but the first has nothing to do with the present war. Three of them have already appeared in different periodicals; but, good as they are, especially two of them, they do not seem to us to equal the two that are new. Finest of the bunch, to our mind, is "The Story of Chagra Barghat," which is singularly fresh, vigorous, and true to life. The volume will be a delightful companion on holiday.

Elizabeth in search of a Husband (1s., White): a crude title, suggestive of a forwardness foreign to Elizabeth, who is a lady teacher. What the story portrays is simply the natural emotions of a young woman chafing against the walls that hem in a teacher's life. Elizabeth has her adventures, which are so disposed as to illustrate dangers that a solitary young lady may ignorantly and unguardedly fall into, especially in a city like London. She might, indeed, have been more careful, without any special tuition.

The Don't-know Family, "a story for everybody," by Noel Hope (1s. 6d., John Hogg), has already appeared as a serial in the *Young Soldier* (Salvation Army weekly). It well deserves the more permanent form of an independent volume. The author presents much greatly needed practical teaching on matters bearing closely upon health, strength, and comfort in a lively and piquant form, suitable to people that are little likely to be reached by manuals of physiology and hygiene.

Mr. Joseph Hocking presents *Esau* and *St. Issey*, two stories of equal length, in a single volume (3s. 6d., Ward, Lock, & Co.), both in his usual vein. A bit of mystery, a dash of adventure, plenty of rapid conversation, the stories will while away an idle hour harmlessly and pleasantly enough.

MISCELLANEOUS.

Mr. J. A. Spender has reprinted from the *Westminster Review*, with a few omissions and verbal alterations, "The Diary of Greville Minor for the Year of Agitation 1903-1904," under the title of *A Modern Journal* (3s. 6d. net, Methuen). "The main concern is of course with the fiscal question, which has dominated all domestic politics for more than a year and is likely to do so for an indefinite time longer." The variations of hopes, fears, speculations, and rumours are treated with much insight and cleverness, and the sketches are amusing and suggestive.

Mr. William Bell Robertson and Mr. Frederick Walker, Clock- and Watch-maker to H.M. King Edward VII. and to H.M. the King of Italy, have produced a most interesting account of *The Royal Clocks* in Windsor Castle, Buckingham and St. James's Palaces, and Hampton Court, with abundant and excellent illlustrations (2s. 6d. John Walker, Ltd., 63 New Bond Street, W.).

In view of the holiday season, the Health Development Association publish handy and pretty guides to (1) *Deal*, (2) *Broadstairs*, and (3) *Llandrindod Wells*, edited by the Director, Mr. G. W. May. A copy of any of them will be sent free in answer to a post-card request forwarded to the Town Clerk.—We mention elsewhere ("First Glances") a useful "Seaside and Inland Holiday Guide for the United Kingdom," issued by the Wentworth Publishing Company.

NEW EDITIONS AND REPRINTS.

Messrs. Macmillan have reprinted, with corrections, Sir Oliver Lodge's very attractive and stimulating volume *Pioneers of Science* (6s.). There are numerous portraits and other illustrations, and the get-up suggests a prize or a gift. The book should be widely read, and not by science students only.

Messrs. Seeley have issued in their "Sixpenny Series" (1) Mrs. Emma Marshall's delightful book, *Winchester Meads in the time of Bishop Ken* — well printed, and bound to be popular; and (2) *In Lincoln Green*, by Edward Gilliat, a very lively and entertaining story.

Mr. Fisher Unwin issues a "complete popular edition" of Prof. Villari's classical work, *The Life and Times of Nicolo Machiavelli*—more than a thousand close-packed pages, well printed and tastefully bound—at the incredible price of 2s. 6d. net. A companion volume to the similar edition of *Savonarola* recently issued. Both volumes should be in all libraries of modern history.

Mr. Henry Frowde opens the new "Florin Series" with *The Poetical Works of Longfellow*—"Oxford complete copyright edition"—878 pages in double columns, with engaging portrait of the poet (about 1877). It is beautifully printed on good paper, and the binding is flexible and tasteful.

The Unit Library has done no better service than to publish a handsome "new and revised edition" of the admirable *Common Thoughts on Serious Subjects* (2s. 6d. net)—"plain words for boys," addressed for the most part during the years 1887-89 to the elder boys of the Rajkumar College at Rajkot, in Kathiawar, by the late Chester Macnaghten, the honoured Principal of that institution for a quarter of a century (1870-96). Mr. Robert Whitelaw furnishes a finely sympathetic biographical introduction. Frontispiece (portrait), and arms of college on cover.

FIRST GLANCES.

CLASSICS.

Examination Papers: (1) on Horace, by T. C. Weatherhead, M.A.; (2) on Thucydides, by T. Nicklin, M.A.,; (3) on Vergil, by W. G. Coast, B.A. 2s. net each. Methuen.

[Judicious, comprehensive, and suggestive. Most serviceable alike to teachers and to pupils.]

Latin Composition, Sentences for. By the Rev. A. Jamson Smith, M.A. 6d. Edward Arnold.

["Based upon the exercises in Mr. A. D. Godley's 'Fables of Orbilius, Part II.'" Pointed suggestions; careful and instructive examples.]

MATHEMATICS.

Arithmetic, New School. By Charles Pendlebury, M.A., F.R.A.S. assisted by F. E. Robinson, M.A. Part I. With or without Answers. 2s. 6d. George Bell.

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Determinants, The Theory of, and their Applications. By Robert Forsyth Scott, M.A. Second edition, revised by G. B. Mathews, M.A., F.R.S., University Lecturer in Mathematics, Cambridge. 9s. net. Cambridge University Press.

Geometry, Constructive: First Year. By John G. Kerr, LL.D. 1s. 6d. Blackie (Science Handbooks for Laboratory and Class-room).

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Mensuration, Elementary. By G. T. Chivers. 5s. Longmans.

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Trigonometry, Beginner's: with a chapter on Logarithms. By M. S. David, B.A. 2s. Black.

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Weights and Measures, English, Decimalization of. By Thomas A. Barber, British Vice-Consul, Oran, Algeria. Heintz (Oran).

SCIENCE.

Bacteria, Yeasts, and Molds in the Home. By H. W. Conn, Ph.D., Professor of Biology in Wesleyan University, Middleton, Conn. 4s. 6d. Ginn.

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Chemical Analysis, Qualitative, A Manual of. By J. F. McGregory, Professor of Chemistry and Mineralogy in Colgate University. 4s. 6d. Ginn.

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Chemistry, Experimental, A Safe Course in. By W. T. Boone, B.A., B.Sc. 2s. Clive (University Tutorial Series).

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Chemistry, Practical. Part II. By William French, M.A., F.I.C., and T. H. Boardman, M.A. 1s. Methuen (Text-books of Technology).

[Lucid and practical. 56 figures. Numerous questions.]

Evolution, Reasons against the Theory of. By Thomas Woods, M.D., M.R.C.S.I., &c. Russell.

Flowering Plants, The Classification of. By Alfred Barton Rendle, M.A., D.Sc., F.L.S. Vol. I.: Gymnosperms and Monocotyledons. 10s. 6d. net. Cambridge University Press (Cambridge Biological Series).

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Radium, and all about it. By S. R. Bottone. 1s. net. Whittaker.

[Popular exposition — historical, practical, and theoretical. Several illustrations.]

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Black's Cours Élémentaire: (1) Petites Comédies. By Mrs. J. G. Frazer. Edited by F. B. Kirkman, B.A. 9d. (2) Premières Lectures, with Reform Exercises. Written and edited by F. B. Kirkman, B.A. 1s.

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Blackie's Modern Language Series: German Strong Verbs and Irregular Weak Verbs. By Carl Heath, L.C.P. 1s.

[Sufficiently full; useful notes.]

Examination Papers, Junior German. By A. Voegelin, M.A. (Lond.). 1s. Methuen.

[In miscellaneous grammar and idioms. Testing; reasonably well graduated.]

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[(1) Good biographical sketch; simple notes; composition exercises; vocabulary. Attractive reader. (2) Good selection; occasional footnotes.]

Rivingtons' Modern French Series—Elementary Texts: Deux Contes d'Andersen (La petite Ondine, and Les Habits neufs du Grand-Duc). Edited by W. G. Hartog, B.A. 9d.
[Brief notes; vocabulary; commonest irregular verbs.]

RELIGION.

Church of England, The Catholicity of the. By the Rev. W. H. Griffith, B.D. 2d. Murray (11 Ludgate Square, E.C.; for the National Protestant Church Union).

Commandments, The Ten, A Catechism on. By W. T. Mason, M.A. 2d. Manchester: Galt. Simpkin, Marshall, & Co.
["For the use of children in elementary schools." No questions on points of doctrine. Intelligent and careful.]

Israel, The Early Story of. By Evelyn L. Thomas. 2s. 6d. net. Longmans (Simple Guides to Christian Knowledge).
[4 maps, 7 full-page plates, and a dozen illustrations in text. Simply and vividly told, and attractively got up.].

MISCELLANEOUS.

Art-Workers' Quarterly: a Portfolio of Practical Designs for Decorative and Applied Art. April, 1904. 2s. 6d. net. Chapman & Hall.
[With one coloured and eight other supplementary plates, beautifully reproduced. Articles practical, interesting, and suggestive.]

Books for the Bairns. No. 99: Some Fairy Tales of the Ancient Greeks. No. 101: The Quest of the Golden Fleece (Hawthorne). 1d. each.

City and Guilds of London Institute: Report of Council, 1904; and Programme of the Central Technical College. Gresham College, London, E.C.
[Full and interesting accounts of important work.]

Cookery Teacher, Vol. I., No. 1. 1½d. post free. 27 Pilgrim Street, E.C.
[Rather thin. But, happily, the editor "is not quite satisfied with it."]

Expression, Corporal, Facial, and Vocal, constituting the Histrionic Art. By the Rev. S. Claude Tickell, A.K.C. 6d. net. Newmann.
[The first sentence occupies two-thirds of the whole exposition.]

Head Mistresses, Report of the Association of, 1904.
[Shows much useful activity.]

Holiday Guide for the United Kingdom, A B C, The Seaside and Inland. 1s. net. Wentworth Publishing Company (Clun House, Surrey Street, Strand, W.C.).
[Practical information. Numerous illustrations.]

Horniman Museum: Handbook to the Collection, arranged as an Introduction to the study of Animal Life. 1d. London County Council.

Lads' Drill Association: Annual Report, 1903. Hon. Sec.: Col. W. Elliot, 44 Harrington Gardens, S.W.
[Mixes up physical and military training.]

Licensing Bill of 1904 (Government), Notes on the. By Arthur Chamberlain, Justice of the Peace for the City and County of Birmingham. Birmingham: printed at 168 Edmund Street.
[Able and incisive criticism. Text of Bill is appended.]

Matriculation Directory. No. XXXVII. June, 1904. 1s. net. Burlington House, Cambridge. University Tutorial Series.

National Union of Teachers: Report for 1904. 1s. N.U.T., 67 and 71 Russell Square, W.C.

Pointers for Life: from Emerson. 1s. net. Gay & Bird.
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MATHEMATICS.

14735. (Professor Morley.)—Given five planes a_1, ..., a_5, and a quadric Q, let a quadric Q_n pass through the intersection of Q and a_n ($n = 1, \ldots, 5$) and the four intersections of the four other planes. Then Q_n intersects Q in a second plane β_n, whose polar as to Q is a point a_n. Prove that the line a_1a_2 passes through the point (a_3, a_4, a_5); or, reciprocally, that the line a_1a_2 lies in the plane $a_3a_4a_5$. Also prove that, if one of the points a lies on Q, then all the points a lie on Q. Arrange the proof so as to hold for the analogous theorem in n dimensions. [The theorem in two dimensions that, given four lines and a conic C, and conics C_n being passed through the three intersections of three lines and the intersections of C and the fourth line, then, if one C_n touches C, all C_n's touch C, is M. Humbert's, *Comptes Rendus*, Vol. cxxix.; and an elegant elementary proof is given by M. Bricard, *Nouv. Ann.*, Sér. 3, Vol. xix., p. 369.]

Additional Solution by Professor Nanson.

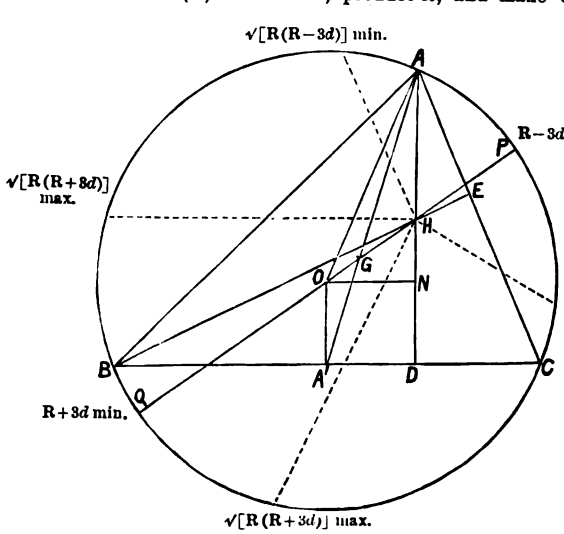
The planes a are connected by an identical relation, which may be taken to be $\Sigma a_r = 0$, and in virtue of it Q may be expressed in the form $\Sigma Q_{rs}a_ra_s$, where Q_{rs} ($= Q_{sr}$) is a constant, and $Q_{rr} = 0$. Now, any quadric through (a_1, Q) is $Q = \alpha_1\Sigma\lambda_{1r}a_ra_r$, where $\lambda_{11} = 0$; and, expressing that it goes through the meets of $a_2, a_3, \ldots, a_n$, we get $\lambda_{1r} = Q_{1r}$; so that $\beta_1 \equiv \Sigma Q_{1r}a_r$. Now, we have to show that the polar line a_1a_2 of $\beta_1\beta_2$ goes through the point $(a_3, a_4, \ldots, a_n)$, or, what is the same thing, that the polar plane of $a_3a_4\ldots a_n$ goes through $\beta_1\beta_2$, and this is obvious, because this plane is $a_1'\Sigma Q_{2r}a_r + a_2'\Sigma Q_{1r}a_r = 0$ or $a_1'\beta_2 + a_2'\beta_1 = 0$, where a_1', a_2' are the values of a_1, a_2 at the point $(a_3, a_4, \ldots, a_n)$.

If the point a_n is on Q, then the plane β_n touches Q. Hence, since $Q \equiv a_n\beta_n + \Sigma Q_{pq}a_pa_q$, where $p, q = 1, 2, \ldots, n-1$, it follows that β_n touches $\Sigma Q_{pq}a_pa_q = 0$, and the bordered determinant condition for this is $|Q_{rs}| = 0$, the symmetry of which shows that all the points a are on Q.

15542. (D. Biddle.)—A triangle is inscribed in a circle of given radius, and has its centroid at a given distance from the centre. (1) Define the limits of area of inscribed triangles whose centroids are thus placed; and (2), given any area within those limits, inscribe a second triangle having this area, and whose centroid occupies the same position as that of the former or one equidistant from the centre of the circle.

Solution by Professor Sanjána, M.A.

Let R be the given radius, and d the given distance from the centre (O) of the centroid (G). Join OG, produce it, and make GH = 2OG;



then H is the orthocentre of the triangle. Taking any point of the circumference A as vertex, the inscribed triangle may be thus obtained:—Join AH, draw OA′ parallel to and half of AH, through A′ draw BC at right angles to OA′ and AH produced; then ABC is the required triangle. Thus, H being fixed, the variable area may be taken as a function of AH. Let AH = $2x$, so that OA′ = x; then BC = $2\sqrt{(R^2-x^2)}$. Also HN = $(R^2-4x^2-9d^2)/4x$; hence

$$AD = 2x + HN + x = (8x^2 + R^2 - 9d^2)/4x.$$

Therefore four times the area of the triangle

$$= 2 \cdot BC \cdot AD = (8x^2 + R^2 - 9d^2)\sqrt{(R^2-x^2)}/x = f(x) \text{ suppose.}$$

It is found that $f'(x) = (9d^2R^2 - R^4 + 8x^2R^2 - 16x^4)/\{x^2\sqrt{(R^2-x^2)}\}$.

Equating the numerator to zero, we get $4x^2 = R^2 \pm 3dR$. Taking positive values only, we have, if $2x < \sqrt{(R^2-3dR)}$, $f'(x)$ negative; if $2x > \sqrt{(R^2-3dR)}$ and $< \sqrt{(R^2+3dR)}$, $f'(x)$ positive; if $2x > \sqrt{(R^2+3dR)}$, $f'(x)$ negative. Hence $4x^2 = R^2 - 3dR$ determines a minimum value, viz., $\frac{3}{4}\sqrt{3}\,(R-3d)^{\frac{1}{2}}(R+d)^{\frac{1}{2}}$, for the area; and $4x^2 = R^2 + 3dR$ determines a maximum value, viz., $\frac{3}{4}\sqrt{3}\,(R+3d)^{\frac{1}{2}}(R-d)^{\frac{1}{2}}$.

Again, when $2x = R-3d$, $\frac{1}{4}f(x) = \frac{3}{4}\sqrt{3}\,(R+3d)^{\frac{1}{2}}(R-d)^{\frac{1}{2}}$, the above maximum; and, when $2x = R+3d$, $\frac{1}{4}f(x) =$ the above minimum. The maxima and minima values are obtained therefore for six alternate positions of A as marked in the figure. The reason why $2x = R \pm 3d$ is not obtained from $f'(x) = 0$ is that x is not a perfectly independent variable, but has itself maxima and minima values at P and Q, the extremities of the diameter through O and G; see Edwards, *Diff. Cal.*, § 492.

If any given value of the area A, between the limits

$$\tfrac{3}{4}\sqrt{3}\,(R-3d)^{\frac{1}{2}}(R+d)^{\frac{1}{2}} \quad \text{and} \quad \tfrac{3}{4}\sqrt{3}\,(R+3d)^{\frac{1}{2}}(R-d)^{\frac{1}{2}},$$

be taken, to find the triangle we have to solve $f(x) = 4\Delta$, and obtain $4x^2$, *i.e.*, $2x$; with this as radius, describe about H as centre a circle cutting the given circumference in two points, either of which will serve for A′ the apex of the second triangle; the triangle A′B′C′ is then easily constructed, with A′ as vertex, H as orthocentre, and O as circum-centre. The diameter OG may be fixed in direction without altering the generality of the problem; the same triangle will always be obtained, though the position may change by taking G on the circumference of a circle about O as centre.

15554. (J. J. Barniville, B.A.)—Having $u_n + u_{n+3} = 3u_{n+1} + 3u_{n+2}$, prove that

$$\left(\frac{5}{-1.7}\right)^2 - \left(\frac{13}{7.17}\right)^2 + \left(\frac{53}{17.73}\right)^2 - \left(\frac{193}{73.263}\right)^2 + \ldots = \frac{1}{2},$$

$$\left(\frac{5}{1.7}\right)^2 - \left(\frac{17}{7.23}\right)^2 + \left(\frac{65}{23.89}\right)^2 - \left(\frac{241}{89.329}\right)^2 + \ldots = \frac{1}{2},$$

$$\left(\frac{13}{-7.17}\right)^2 - \left(\frac{25}{17.31}\right)^2 + \left(\frac{109}{31.51}\right)^2 - \left(\frac{389}{151.529}\right)^2 + \ldots = \frac{1}{98},$$

$$\left(\frac{17}{-7.23}\right)^2 - \left(\frac{37}{23.47}\right)^2 + \left(\frac{151}{47.217}\right)^2 - \left(\frac{565}{217.769}\right)^2 + \ldots = \frac{1}{98}.$$

Solution by Professor S. Sircom.

We have

$$\left(\frac{5}{-1.7}\right)^2 - \left(\frac{13}{7.17}\right)^2 = \left(\frac{5}{-1.7} - \frac{13}{7.17}\right)\left(\frac{5}{-1.7} + \frac{13}{7.17}\right) = \frac{98.72}{1^2.7^2.17^2}$$

$$= \frac{144}{1^2.17^2} = \frac{1}{2}\frac{288}{1^2.17^2} = \frac{1}{2}\left(1 - \frac{1}{17^2}\right).$$

Similarly $\left(\frac{53}{17.73}\right)^2 - \left(\frac{193}{73.263}\right)^2 = \frac{1}{2}\left(\frac{1}{17^2} - \frac{1}{263^2}\right)$,

and the sum of the first series is $\frac{1}{2}$. The other results are obtained in the same manner: thus

$$\left(\frac{13}{7.17} - \frac{25}{17.31}\right)\left(\frac{13}{7.17} + \frac{25}{17.31}\right) = \frac{228.578}{7^2.17^2.31^2} = \frac{456}{7^2.31^2}$$

$$= \frac{1}{2}\left(\frac{1}{7^2} - \frac{1}{31^2}\right),$$

and the sum of the third series is $\frac{1}{98}$.

To prove the property upon which the summation depends we have to show that

$u_{n-2}v_n - u_{n-1}v_{n-2} = 2v_{n-1}^2$, $u_{n-2}v_n + u_{n-1}v_{n-2} = \frac{1}{2}(v_n^2 - v_{n-1}^2)$ (n being even),

where $u_0, u_1, u_2, \ldots$ is the series 5, 13, 53 .....(1),

and $v_0, v_1, v_2, \ldots$ is the series −1, 7, 17 .....(2).

The generating function of (1) is

$$\frac{5-2x-x^2}{(1+x)(1-4x+x^2)} = \frac{1}{1+x} + 2\frac{2-x}{1-4x+x^2},$$

$$\frac{2-x}{1-4x+x^2} = \frac{2-\alpha^{-1}}{1-\alpha^{-2}}\frac{1}{1-\alpha x} + \frac{\alpha-2}{\alpha^2-1}\frac{1}{1-\alpha^{-1}x}$$

(where $\alpha = 2+\sqrt{3}$, $\alpha^{-1} = 2-\sqrt{3}$

$$= \frac{2\alpha-1}{\alpha-\alpha^{-1}}\frac{1}{1+\alpha x} + \frac{1-2\alpha^{-1}}{\alpha-\alpha^{-1}}\frac{1}{1-\alpha^{-1}x} = \frac{1}{2}\frac{\alpha}{1-\alpha x} + \frac{1}{2}\frac{\alpha^{-1}}{1-\alpha^{-1}x},$$

whence $u_{n-2} = \alpha^{n-1} + 1 + \alpha^{-n+1}$; $u_{n-1} = \alpha^n - 1 + \alpha^{-n}$. The generating function of (2) is $\frac{10x-x^2-1}{(1+x)(1-4x+x^2)} = \frac{1+x}{1-4x+x^2} - \frac{2}{1+x}$,

and, proceeding as before,

$$v_n = \tfrac{1}{2}(\sqrt{3}+1)\alpha^n - 2 + \tfrac{1}{2}(\sqrt{3}-1)\alpha^{-n},$$

$$v_{n-1} = \tfrac{1}{2}(\sqrt{3}+1)\alpha^{n-1} + 2 + \tfrac{1}{2}(\sqrt{3}-1)\alpha^{-n+1},$$

$$v_{n-2} = \tfrac{1}{2}(\sqrt{3}+1)\alpha^{n-2} - 2 + \tfrac{1}{2}(\sqrt{3}-1)\alpha^{-n+2},$$

which gives the required results on substitution.

15575. (R. Chartres.)—If $mx - 1 = r \cdot s$, $x > 3$, then, if (1) r and s are consecutive integers, r the greater, $1/x$ will give six recurring (*bona fide*)

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figures in the scales $\left(nx\begin{smallmatrix}+r\\-s\end{smallmatrix}\right)$, and three recurring (*bona fide*) figures in the scales $\left(nx\begin{smallmatrix}+s\\-r\end{smallmatrix}\right)$; (2) but, if $r = s$, $1/x$ will give four such figures in the scales $(nx \pm r)$. Proof required without the modern theory of numbers.

Solution by the Proposer.

$$r^6 - 1 = (r-1)(r+1)(r^2+r+1)(r^2-r+1).$$

Omitting the first three factors, which give only 1, 2, 3 recurring figures respectively, then $1/x = 1/(r^2-r+1) = 1/(rs+1)$, where $r = s+1$ gives six recurring figures in the scales $\left(nx\begin{smallmatrix}+r\\-s\end{smallmatrix}\right)$ (Question 15462), and, if $mx - 1 = rs$, $1/x$ will therefore give six recurring figures. Similarly we get three recurring figures in the scales $\left(nx\begin{smallmatrix}+s\\-r\end{smallmatrix}\right)$, and four if $r = s$ in the scales $(nx \pm r)$.

(1) Since $3 \cdot 19 - 1 = 8 \cdot 7$, therefore $\frac{1}{19}$ will give six figures in the scales $\left(19n\begin{smallmatrix}+8\\-7\end{smallmatrix}\right)$, and three figures in the scales $\left(19n\begin{smallmatrix}+7\\-8\end{smallmatrix}\right)$.

(2) If $x = r^2+1$, then $1/x = \cdot\dot{0}0\,(r-1)(r-\dot{1})$. Hence, if we might use an irrational radix, $\frac{1}{19} = 1/[(\sqrt{18})^2+1] = \cdot\dot{0}0\,(3\sqrt{2}-1)(3\sqrt{2}-\dot{1})$, or four figures in the scale $(3\sqrt{2})$.

15276. (*θ. β.*)—Let x, y be circular co-ordinates, and let the equations to three lines be $xt_s + y = x_s t_s$ $(s = 1, 2, 3)$, where $|t_s| = 1$ and $x = x_s$, $y = x_s t_s$ is the reflection of the origin in the line. Verify that, for the triangle formed of these lines, the centroid is given by $x = a_1 - \frac{1}{3}a_2 p$, the orthocentre by $x = a_1 - a_2 p$, and the Simson-line of the point $x = a_1 - a_2 t$ by

$$xt^2 - yt = -\tfrac{1}{2}a_2 t^3 + (a_1 - \tfrac{1}{2}a_2 p)t^2 - (b_1 - \tfrac{1}{2}a_2 q)\,t + a_2 r,$$

where

$$a_1 = \Sigma x_1 t_1^2/(t_1-t_2)(t_1-t_3), \quad a_2 = \Sigma x_1 t_1/(t_1-t_2)(t_1-t_3),$$

$$b_1 = r\Sigma x_1/(t_1-t_2)(t_1-t_3),$$

$$p = t_1+t_2+t_3, \quad q = t_2t_3+t_3t_1+t_1t_2, \quad r = t_1t_2t_3.$$

[For notation and methods, see Morley, *Transactions of the American Mathematical Society*, Vol. I., p. 97.] From this expression for the Simson-line we obtain immediately the well known result that its envelope is a hypocycloid of class 3, with the nine-point circle as its vertex-circle.

Solution by G. N. Bates, M.A.

The intersection of the lines (ii.) and (iii.) is given by

$$x = \frac{x_2t_2 - x_3t_3}{t_2-t_3} = a_1 - a_2t_1, \quad y = -\frac{t_2t_3(x_2-x_3)}{t_2-t_3} = b_1 - \frac{ra_2}{t_1};$$

therefore the circum-centre of the triangle formed by the three lines is $x = a_1$, while $|a_2|$ is the circum-radius. The centroid is therefore $x = a_1 - \frac{1}{3}a_2 p$, and the orthocentre $x = a_1 - a_2 p$.

The angle θ between the two lines

$$x\lambda_1 + y = \text{constant} \quad \text{and} \quad x\lambda_2 + y = \text{constant}$$

is given by $e^{2\theta i} = \lambda_1/\lambda_2$. Now the angle between the Simson-line of P and BC is the complement of half the angle subtended at O by the arc PA of the circum-circle, and the Simson-line also passes through the mid-point of PH. Its equation is therefore

$$xt - y = a_1 t - \tfrac{1}{2}a_2 t\,(t+p) - b_1 + ra_2/2t + \tfrac{1}{2}a_2 q \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(i.)}$$

or

$$xt^2 - ty = -\tfrac{1}{2}a_2 t^3 + (a_1 - \tfrac{1}{2}a_2 p)\,t^2 - (b_1 - \tfrac{1}{2}a_2 q)\,t + \tfrac{1}{2}ra_2 \quad \ldots\ldots\text{(ii.)}.$$

We may now either obtain the (xy) equation of the envelope by differentiating (ii.) with respect to t, or the (xt) equation of the envelope by differentiating (i.) with respect to t. We have then, on differentiating (i.),

$$x = a_1 - \tfrac{1}{2}a_2 p - a_2 t - ra_2/2t^2 \quad \text{or} \quad x - a_1 + \tfrac{1}{2}a_2 p = -a_2 t - ra_2/2t^2,$$

which is found to agree with the equation of a three-cusped hypocycloid whose centre is at the point $a_1 - \frac{1}{3}a_2 p$ (the N.P. centre).

[*Cf.*, for the more general theorem when lines inclined at θ to the sides are taken, a paper "On a System of Hypocycloids of Class 3 inscribed in a given 3-line, &c.," by Dr. H. A. Converse, *Annals of Mathematics*, April, 1904.]

N.B.—My equation (ii.) differs from the equation of the Simson-line in Question in having $\frac{1}{2}ra_2$ for ra_2.

15563. (R. F. Davis, M.A.)—Given a hyperbola whose eccentricity = 2, prove that the circle described upon any focal chord as diameter passes through the further extremity of the transverse axis.

Solutions (I.) *by* R. Tucker, M.A., (II.) *by* C. M. Ross.

(I.) Referring to A′ as origin, the equation to the curve is

$$x^2/a^2 - 2x/a = y^2/b^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(i.)}.$$

Let the equation to PQ be

$$mx = a\,(m-y)(1+e) \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(ii.)};$$

then the equation to the two straight lines A′P, A′Q will be

$$a^2m\,(1+e)(x^2/a^2 - y^2/b^2) = 2x\,[mx + ay\,(1+e)],$$

whence

$$b^2m\,[(1+e)-2]\,x^2 \ldots - a^2m\,(1+e)\,y^2 = 0.$$

These lines are at right angles if $b^2(e-1) - a^2(1+e) = 0$, *i.e.*, if $e^2 - e - 2 = 0 = (e-2)(e+1)$. Hence, &c.

(II.) The equation of the hyperbola is

$$3x^2 - y^2 = 3a^2 \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(1)},$$

and the equation of a focal chord is

$$y = m\,(x-2a) \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(2)}.$$

(2) cuts (1) in the points whose abscissæ are given by

$$(m^2-3)\,x^2 - 4am^2x + a^2(4m^2+3) = 0.$$

If x_1 and x_2 are the roots of this equation,

$$x_1 + x_2 = 4am^2/(m^2-3), \quad x_1x_2 = a^2(4m^2+3)/(m^2-3).$$

Again, if y_1 and y_2 are the ordinates of ends of the focal chord,

$$y_1 + y_2 = 12am/(m^2-3) \quad \text{and} \quad y_1y_2 = 9a^2m^2/(m^2-3).$$

Hence the equation of the circle on focal chord as diameter is

$$(m^2-3)(x^2+y^2) - 4am\,(mx+3y) - a^2(5m^2-3) = 0.$$

This circle plainly passes through the point $(-a, 0)$, which is the further extremity of the transverse axis.

15539. (Lt.-Col. Allan Cunningham, R.E.)—For what forms of m is $X^3 \pm 1 \equiv 0 \pmod m$? Show how to find X when m is given. Ex.—$m = 99991$.

Solution by the Proposer.

(i.) Excluding the obvious divisor $m = X \pm 1$, all *prime* divisors must be of form $p = 6w + 1$, and all *composite* divisors must be a product of such primes, so that $m = A^2 + 3B^2$.

(ii.) When m is *given*, let m be expressed in the form $m = A^2 + 3B^2$. Then

$$m = \frac{(A-B)^3 - (2B)^3}{(A-B) - (2B)} = \frac{x^3 - y^3}{x - y} \quad \text{(suppose)}.$$

Here $x = A - B$, $y = 2B$;

$$x^3 - y^3 \equiv 0 \pmod m;$$

therefore

$$(x \pm km)^3 \equiv y^3 \pmod m.$$

Now find k such that $x \pm km \equiv 0 \pmod m$, so that

$$(x \pm km)/y = \text{integer} = X.$$

Then X (when positive) is a solution of $X^3 - 1 \equiv 0$, and X (when negative) is a solution of $X^3 + 1 \equiv 0 \pmod m$.

Ex.—$m = 99991 = 278^2 + 3 \cdot 87^2 = A^2 + 3B^2$. Therefore $x = A - B = 191$, $y = 2B = 174 = 2 \cdot 3 \cdot 29$, and $191^3 \equiv 174^3 \pmod m$. Taking $k = 17$, $191 + 17m = 1700038 = 2 \cdot 29 \cdot 29311$; therefore

$$(2 \cdot 29 \cdot 29311)^3 \equiv (2 \cdot 3 \cdot 29)^3, \quad \text{and} \quad 29311^3 \equiv 3^3 \pmod m;$$

therefore

$$(29311 - m)^3 \equiv -70680^3 \equiv 3^3, \quad \text{and} \quad 23560^3 \equiv -1 \pmod m.$$

Thus m is a divisor of $(23560^3 + 1)$; and therefore also of $(23559^3 - 1)$.

Note.—The writer's *Tables of Quadratic Partitions* (now in the press) give the partitions $p = A^2 + 3B^2$ for all primes $p \not> 100{,}000$; so that the roots of $x^3 \pm 1 \equiv 0 \pmod p$ can be found by these tables up to

$$p \not> 100{,}000.$$

15375. (Professor Nanson.)—Prove that

$$(a_1X_2Y_3Z_4)\,(f_1X_2Y_3Z_4) + b_1(X_2Y_3Z_4)(g_1X_2Y_3Z_4) + (c_1X_2Y_3Z_4)(h_1X_2Y_3Z_4) = 0$$

where $X_p,\ Y_p,\ Z_p = h_py - g_pz + a_pw$; $f_pz - h_px + b_pw$; $g_px - f_py + c\ w$.

Solution by the Proposer.

The determinant aggregate is, with sign changed, manifestly half the seven-line determinant

$$\begin{vmatrix} (\lambda_{pq}) & X_p & Y_p & Z_p \\ X_q & . & . & . \\ Y_q & . & . & . \\ Z_q & . & . & . \end{vmatrix} \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(1)},$$

where (λ_{pq}) is the compound of the four-row arrays

$$(a_rb_rc_rf_rg_rh_r),\ (f_rg_rh_ra_rb_rc_r) \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(2)},$$

and therefore vanishes because (1) is the compound of the deficient arrays obtained by placing under the arrays (2) respectively the arrays

$$\begin{matrix} . & -z & y & w & . & . \\ z & . & -x & . & w & . \\ -y & x & . & . & . & w \end{matrix}; \quad \begin{matrix} w & . & . & . & -z & y \\ . & w & . & z & . & -x \\ . & . & w & -y & x & . \end{matrix} \quad \ldots\text{(3)}.$$

It is obvious that this result may be generalized by replacing the arrays (2) by any two arrays A, A′, and the arrays (3) by any two arrays B, B′ whose compound is an array of zeros, provided that all the arrays A, A′, B, B′ have the same number of columns and that there are as many rows in A′ and B′ as in A and B. It is manifest that this generalization includes as a very special case the result of Question 15426; *cf.* Vol. v., New Series, p. 75.

Calcul des côtés (1) *du triangle et hexagone réguliers;* (2) *des décagones.*

By Professor L. Catalá.

(1) Soient des arcs $AB = BC = CD = \frac{1}{6}\pi$; alors $AB = \lambda_6$ et $BD = \lambda_3$. Le triangle rectangle ABD donne

$$\lambda_6^2 + \lambda_3^2 = 4 \quad \ldots\ldots\ldots\ldots\ldots\ldots\text{(i.)}$$

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et le quadrilatère cyclique ABCD,

$$\lambda_6^2 + 2\lambda_6 = \lambda_3^2 \quad \text{.....(ii.).}$$

Éliminant λ_3 entre (i.) et (ii.), $\lambda_6^2 + \lambda_6 - 2 = 0$. Des deux racines $+1$ et -2 de cette équation, la racine positive seule convient, et l'on a $\lambda_6 = 1$. L'élimination de λ_6 entre (i.) et (ii.) conduit à l'équation $4\lambda_3(\lambda_3^2 - 3) = 0$. L'unique racine admissible est $\lambda_3 = \sqrt{3}$. On trouve ainsi la valeur du côté du triangle équilatéral, sans supposer connu celle du hexagone.

(2) Soient les arcs $AB = BC = CD = DE = EF = \frac{2}{10}\pi$. Dans le triangle rectangle ADF, $\lambda_{5,1}^2 + \lambda_{10,3}^2 = 4$ .....(i.), et dans le quadrilatère cyclique ACDF,

$$\lambda_{10,3}^2 = \lambda_{5,1}^2 + 2\lambda_{10,1} \quad \text{.....(ii.).}$$

De (i.) et (ii.), $\lambda_{10,3}^2 = 2 + \lambda_{10,1}$ .....(iii.).

D'ailleurs, M étant le point d'intersection de FC et DE, des triangles isoscèles MFE et COM, $\lambda_{10,3} - \lambda_{10,1} = 1$. De cette équation et (iii.),

$$\lambda_{10,3}^2 - \lambda_{10,3} - 1 = 0.$$

Tirant d'ici $\lambda_{10,3}$, puis substituant dans (iii.),

$$\lambda_{10,3} = \tfrac{1}{2}(\sqrt{5}+1), \qquad \lambda_{10,1} = \tfrac{1}{2}(\sqrt{5}-1),$$

en ne considérant que la racine positive de la dernière équation.

15517. (C. M. Ross.)—Eliminate x, y, z from the equations

$$ax^2 + by^2 + cz^2 + 2fyz + 2gzx + 2hxy = 0,$$
$$a'x^2 + b'y^2 + c'z^2 + 2f'yz + 2g'zx + 2h'xy = 0,$$
$$a''x^2 + b''y^2 + c''z^2 + 2f''yz + 2g''zx + 2h''xy = 0,$$

expressing the eliminant as the equation of a determinant to zero.

Solution by the Proposer.

Let
$$u \equiv ax^2 + by^2 + cz^2 + 2fyz + 2gzx + 2hxy = 0 \quad \text{.....(1),}$$
$$v \equiv a'x^2 + b'y^2 + c'z^2 + 2f'yz + 2g'zx + 2h'xy = 0 \quad \text{.....(2),}$$
$$w \equiv a''x^2 + b''y^2 + c''z^2 + 2f''yz + 2g''zx + 2h''xy = 0 \quad \text{.....(3).}$$

Then $\partial u/\partial x = 2(ax + hy + gz) = 0$, $\partial u/\partial y = 2(hx + by + fz) = 0$,
$\partial u/\partial z = 2(gx + fy + cz) = 0$, ...

Hence

$$J \equiv \begin{vmatrix} ax+hy+gz, & hx+by+fz, & gx+fy+cz \\ a'x+h'y+g'z, & h'x+b'y+f'z, & g'x+f'y+c'z \\ a''x+h''y+g''z, & h''x+b''y+f''z, & g''x+f''y+c''z \end{vmatrix} = 0.$$

The Jacobian is evidently of the third degree; it is therefore of the form

$$J \equiv Ax^3 + By^3 + Cz^3 + 3Fx^2y + 3Gxy^2 + 3Hy^2z + 3Kyz^2 + 3Lz^2x + 3Mzx^2 + 6Nxyz = 0.$$

Again
$$\partial J/\partial x = Ax^2 + Gy^2 + Lz^2 + 2Nyz + 2Mzx + 2Fxy = 0 \quad \text{.....(4),}$$
$$\partial J/\partial y = Fx^2 + By^2 + Kz^2 + 2Hyz + 2Nzx + 2Gxy = 0 \quad \text{.....(5),}$$
$$\partial J/\partial z = Mx^2 + Hy^2 + Cz^2 + 2Kyz + 2Lzx + 2Nxy = 0 \quad \text{.....(6).}$$

Hence, eliminating $x^2, y^2, z^2, 2yz, 2zx, 2xy$ from equations (1), ..., (6), the required eliminant is

$$\begin{vmatrix} a & b & c & f & g & h \\ a' & b' & c' & f' & g' & h' \\ a'' & b'' & c'' & f'' & g'' & h'' \\ A & G & L & N & M & F \\ F & B & K & H & N & G \\ M & H & C & K & L & N \end{vmatrix} = 0.$$

9700. (Professor Hanumanta Rau.)—Prove that, if n be even,

$$\sec^2 a + \sec^2(a+\pi/n) + \sec^2(a+2\pi/n) + \text{... to } 2n \text{ terms} = 2n^2 \operatorname{cosec}^2 na.$$

Solution by Professor G. B. M. Zerr.

From trigonometry we get

$$\sin a \sin(a+\pi/n) \sin(a+2\pi/n) \ldots \sin\{a+(n-1)\pi/n\} = \sin na/2^{n-1} \quad (1).$$

Put $a = \pi + a$ in (1); then, if n be even,

$$\sin(\pi+a) \sin\{a+(n+1)\pi/n\} \sin\{a+(n+2)\pi/n\} \ldots \sin\{a+(2n-1)\pi/n\} = \sin na/2^{n-1} \ldots (2).$$

The product of (1) and (2) gives

$$\sin a \sin(a+\pi/n) \sin(a+2\pi/n) \ldots \sin\{a+(2n-1)\pi/n\} = \sin^2 na/2^{2n-2} \ldots (3).$$

Put $a = a + \frac{1}{2}\pi$ in (3), and we get, if n be even,

$$\cos a \cos(a+\pi/n) \cos(a+2\pi/n) \ldots \cos\{a+(2n-1)\pi/n\} = \sin^2 na \cos^2 \tfrac{1}{2}n\pi/2^{2n-2} = \sin^2 na/2^{2n-2} \ldots (4).$$

Differentiate (4) with respect to a, and we get

$$\sin^2 na/2^{2n-2}\{\tan a + \tan(a+\pi/n) + \tan(a+2\pi/n) + \text{... to } 2n \text{ terms}\} = -(2n \sin na \cos na)/2^{2n-2};$$

therefore

$$\tan a + \tan(a+\pi/n) + \tan(a+2\pi/n) + \text{... to } 2n \text{ terms} = -2n \cot na \ldots (5).$$

Differentiating (5) with respect to a,

$$\sec^2 a + \sec^2(a+\pi/n) + \sec^2(a+2\pi/n) + \text{... to } 2n \text{ terms} = 2n^2 \operatorname{cosec}^2 na.$$

Note by A. M. Nesbitt, M.A.

I do not know whether the following point has hitherto escaped attention; at any rate I have never seen it noticed.

In solving the equations

$$\frac{x}{a+\lambda} + \frac{y}{b+\lambda} + \frac{z}{c+\lambda} = 1, \qquad \frac{x}{a+\mu} + \frac{y}{b+\mu} + \frac{z}{c+\mu} = 1,$$
$$\frac{x}{a+\nu} + \frac{y}{b+\nu} + \frac{z}{c+\nu} = 1,$$

the usual method adopted is to show that the "cubic" in θ,

$$\frac{x}{a+\theta} + \frac{y}{b+\theta} + \frac{z}{c+\theta} - 1 = \frac{(\lambda-\theta)(\mu-\theta)(\nu-\theta)}{(a+\theta)(b+\theta)(c+\theta)},$$

is satisfied by the *four* values $\lambda, \mu, \nu, \infty$ for θ, and is therefore an identity.

Now, in actual fact, the terms independent of θ vanish at once; for there are $bcx + cay + abz - abc$ on the left-hand side, and $\lambda\mu\nu$ on the right-hand side; while, since λ, μ, ν are the three roots of any one of the three proposed equations, we get at once $\lambda\mu\nu = \Sigma bcx - abc$. Thus, the "cubic" has a root 0, and the resulting "quadratic" still has the three roots λ, μ, ν. The "infinite root" has never seemed entirely satisfactory to me.

QUESTIONS FOR SOLUTION.

15605. (James Blaikie, M.A.)—A. and B. play at lawn-tennis, and A.'s chance of winning each point is to B.'s chance as m to n. Find A.'s chance of winning the game (1) when the score stands at "deuce," (2) when it stands at A.'s vantage, (3) at B.'s vantage.

15606. (Rev. J. Cullen.)—Given four vectors $\alpha, \beta, \gamma, \delta$, show that, if $\phi(t) = V(\alpha + t\beta)(\gamma + t\delta)^{-1}$, then $\Sigma UV\phi(t_2)\phi(t_3)$ is invariable for all values of t_1, t_2, t_3, provided $t_1 > t_2 > t_3$. Hence obtain the equation of the plane formed by the intersection of the reciprocal cone (whose vertex is the origin) with the cylindroid determined by two given screws (σ, ω) and (σ_1, ω_1).

15607. (G. H. Hardy, M.A.)—Prove the formulæ

$$\int_0^\infty \frac{\sin(ax - b\sin x)}{x}\,dx = \tfrac{1}{2}\pi\left\{1 - \int_0^b J_0(b)\,db - \int_0^b J_1(b)\,db\right\} \quad \text{.....(1);}$$

$$\frac{1}{2a^2} - \frac{J_0(x)}{1^2+a^2} + \frac{J_0(2x)}{2^2+a^2} - \ldots = \frac{\pi J_0(aix)}{2a \sinh a\pi} \quad \text{.....(2);}$$

$$\int_0^{\frac{1}{2}\pi} \cos(x\sin\phi) \log\cos\phi\,d\phi = \tfrac{1}{2}\pi[Y_0 - J_0 \log 2x] \quad \text{.....(3).}$$

In the first formula $0 < a < 1$, in the second $0 < x < \pi$. What do the formulæ become when these restrictions are removed?

15608. (Lt.-Col. Allan Cunningham, R.E.)—Factorise into *prime* factors $N = (2^{64} \mp 2^{32} + 1)^2 + 1$. (This number contains 39 figures.)

15609. (Robt. W. D. Christie.)—P being a prime of form $4m-1$, and $p_n^2 - Pq_n^2 = N_n$ (p_n, q_n convergents), prove the equation

$$a^2 \pm N_n = q_n[(P - i^2)q_n - 2ai].$$

E.g., $P = 139$, $N_n = 1$, 2, or 3, a = an integer to be found, and i = integer of $\sqrt{P}$; then

$$5196131^2 - 1 = 6578829(18 \times 6578829 - 2 \times 5196131 \times 11),$$
$$590^2 + 2 = 747(18 \times 747 - 2 \times 590 \times 11),$$
$$15^2 + 3 = 19(18 \times 19 - 2 \times 15 \times 11).$$

15610. (C. M. Ross.)—Eliminate x, y, z from the equations

$$x^2 + y^2 + z^2 = l^2, \quad x^3 + y^3 + z^3 = m^3, \quad x^4 + y^4 + z^4 = n^4, \quad xyz = p^3 \quad (1, 2, 3, 4).$$

15611. (J. J. Barniville, B.A.)—Having $u_n = 4u_{n-1} - 4u_{n-2} + u_{n-3}$, prove that

$$\frac{1}{2^2} + \frac{4}{3^2} + \frac{11}{6^2} + \frac{29}{14^2} + \frac{76}{35^2} + \ldots = \frac{5}{4},$$
$$\frac{1}{3^2} + \frac{4}{4^2} + \frac{11}{7^2} + \frac{29}{15^2} + \frac{76}{36^2} + \ldots = \frac{13}{16},$$
$$\frac{1}{6^2} + \frac{4}{7^2} + \frac{11}{10^2} + \frac{29}{18^2} + \frac{76}{39^2} + \ldots = \frac{11}{36} + \frac{1}{11},$$
$$\frac{1}{2.3} + \frac{4}{3.4} + \frac{11}{6.7} + \frac{29}{14.15} + \ldots = 1.$$

15612. (Professor Langhorne Orchard, M.A., B.Sc.)—Sum to n terms the series

$$2 + \frac{5}{2} + \frac{24}{7} + \frac{61}{14} + \frac{122}{23} + \frac{213}{34} + \ldots.$$

15613. Professor Nanson.)—If $a, b, \ldots$ are the n roots of $f(x)$, prove that $\Sigma \frac{a}{b} \frac{f'(a)}{f'(b)} = n(n-1)$, provided that $\Sigma a^r = 0$, where r has the values 1, 2, ... up to $\frac{1}{2}n$ or $\frac{1}{2}(n-1)$ according as n is even or odd.

15614. (C. E. Youngman, M.A.)—Discuss the curve $AP^2 = BP.CP$, showing that it can be obtained by the intersection of a pair of orthogonal circles belonging to two coaxal systems (one to each) which have the circle ABC in common, and whose radical axes bisect at right angles the bisectors of the angle A. Construct the normal at P, the asymptote,

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and the foci. Prove also that when the curve has a node the tangents thereat cut quadrantal arcs from the circumference ABC.

15615. (Professor Cochez.)—Étudier les courbes

(1) $y = x - 1/x - 2\log x$; (2) $2x^4 - x^2y^2 - 6x + 4y + 1 = 0$.

15616. (Professor Nanson)—Four lines 1, 2, 3, 4 determine three quadrics S_1, S_2, S_3, S_4, each passing through three of the lines. Show that S_1, S_2, S_3, S_4 are connected by an identical equation $\Sigma \lambda_{pq} S_p S_q = 0$ where λ_{pq} is a constant which vanishes when the lines p, q intersect.

15617. (A. M. Nesbitt, M.A.)—(Suggested by Question 15492.)—An equilateral hyperbola makes intercepts a, b on the x axis and c, d on the y axis (axes rectangular). Prove that (1) $ab + cd = 0$, and that (2) the normals at the four points will be concurrent if

$$a^2 + b^2 = c^2 + d^2 + ab.$$

15618. (A. R. Richardson.)—A and B are two fixed conics having F as a focus. Four variable conics are drawn having F as focus and a given straight line is tangent to all. Their other common tangents touch A, and all of the conics but one touch B. Find the envelope of the fourth conic.

15619. (Professor Neuberg.)—Soient A, A′ les extrémités d'un axe d'une ellipse, M un point mobile sur cette courbe. On inscrit au triangle MAA′ un carré PQRS dont le côté RS repose sur AA′. Trouver les lieux des points P, Q et du centre du carré.

15620. (D. Biddle.)—ABC being a given plane triangle of which I is the in-centre, draw tangents to the in-circle across the angles, so that the three resulting triangles may be equal and have a maximum area.

15621. (R. Tucker, M.A.)—ABC is a triangle. Ω (or Ω′) is a B-point, and ω_1, ω_2, ω_3 are the B-angles of the triangles ΩBC, ΩCA, ΩAB: prove that

$$\Sigma(\cot \omega_r) = \frac{1 + \cot A \cot B \cot C \cot \omega - \cot^2 \omega + 2\cot^3 \omega + \cot^4 \omega}{\cot^2 \omega - \cot A \cot B \cot C}.$$

15622. (Professor Sanjána, M.A.)—In a circle, whose diameter is AB, a quadrilateral ADEB is inscribed, and PQR is the inscribed triangle whose sides are parallel to AD, DE, EB, the side QR being parallel to DE: prove that $QR^2 + DE^2 = AB^2$, and that the triangle is equal in area to the quadrilateral.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

7806. (The late Professor Clifford, F.R.S.)—A bubble consists of v cubic centimetres of water, and requires an amount of work w to increase its radius from 10 to 20 centimetres; if a cubic centimetre of water requires the work h to convert it into steam at the same temperature, find the thickness of the film when the liquid may be regarded as just passing into the gaseous form, the bubble being blown out into a state of extreme tenuity.

7879. (D. Edwardes.)—In any spherical triangle, prove that

$$2\sin s \sec^2 r = \sin c \cos(s-c) + \sin b \cos(s-b) + \sin a \cos(s-a),$$

r being the inscribed radius and $2s$ the perimeter.

8054. (Colonel Clarke, C.B., F.R.S.)—The sum of three chords in a given circle (radius $= a$) is c; find the chance that a triangle could be formed of them.

8059. (T. Muir, LL.D., F.R.S.E.)—Prove that the Pfaffian

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Market Bosworth Gram. S.
Shine, J.N. *gm.d.* Mercers'S., Holborn, E.C.
Brandon, G.N. *d.*
St. Paul's S., W. Kensington
Jobson, W.A.B. *gm.d.*
Tollington Schools, N.
Lester, L.W. *s.h.ch.d.* Hastings Gram. S.
Walker, G. *s.a.f.d.*
HarboroughGram.S., MarketHarborough
Royle, G.E. *d.* University S., Southport
deBaughn, W.J. *gm.d.*
London Rd. Boys' S., Burgess Hill
Froggatt, A.E.D. *f.* Ludlow Comm. S.
Leader, H.E. *s.gm.*
Sir Walter St. John's S., Battersea
Bradley, E.V. *a.al.d.*
NorthernPolytechnicDayS., Holloway, N.
Burton, A.F. *f.d.* Wirksworth Gram. S.
Hooper, J.W. *g.* Wirksworth Gram. S.
Dungey, F.H. *g.al.f.d.*
Sir Andrew Judd's Comm. S., Tonbridge
Douty, R.J.C. *f.ch.* Chigwell School
McConnell, S. *a.d.*
Mundella Higher Elem. S., Nottingham
Sandison, L.M. *f.*
Modern S., Newcastle-on-Tyne
Gaved, A.C. *phys.d.*
Bible Christian Coll., Shebbear
Maytham, A.A. *al.*
St. George's Coll., Weybridge
Salomon, V. *bk.ch.d.*
University S., Southport
Jones, T.S. *ch.* Wirksworth Gram. S.
Kneen, W.H. *ch.d.* Douglas Secondary S.
Allen, J.E. *al.* Wirksworth Gram. S.
Chapman, F.W. Maldon Gram. S.
Kissack, W.D. *ma.ch.d.*
Douglas Secondary S.
Newman, W.M. *d.* Warwick H., Southsea
Ratcliff, F.W. *g.a.f.d.*
Wreight's S., Faversham
Corfield, J.H. *ma.* TechnicalDayS., Walsall
Malvin, M.M. *sh.* Tollington Schools, N.
Morley, J.A. *ma.ch.d.* Hutton Gram. S.
Lewis, E.F. *sh.*
NorthernPolytechnicDayS., Holloway, N.
Masterman, C.F. *ch.*
Taunton's Trade S., Southampton
House, J.T. *a.* Tollington Schools, N.
Jackson, J.W. Market Bosworth Gram. S.
Bartholomew, E. *f.* Tollington Schools, N.
Lewin, T. *phys.ch.* Douglas Secondary S.
Macfarlane, H. *h.f.* Tollington Schools, N.
Martyn, V.C. *ch.* Private tuition
Bettison, W.F. *phys.d.*
Sir Walter St. John's S., Battersea
Schmeisser, S.K. *gm.d.*
Northern Polytechnic Day S. Holloway, N.
Wright, R.W. Wirksworth Gram. S.
Beck, C. Tollington Schools, N.
Hawkes, J.C. *d.* Wreight's S., Faversham
Hodge, H.T. *ch.* Tavistock Gram. S.
Jameson, J. *f.* Argyle H., Sunderland
Shaw, W.B. Wirksworth Gram. S.
Griffiths, G.H.C. St.G.
St. Helen's Coll., Southsea
Pugh, C.R.J. *d.* Technical Day S., Walsall
Williams, J.B. *d.*
Osborne High S., West Hartlepool
Gallop, L. Tollington Schools, N.
Mole, W. *ma.ch.*
Rutherford Coll., Newcastle-on-Tyne
Shaw, G.R. *gm.* Tollington Schools, N.
Shaw, W.R. *bk.d.sh.*
Dagmar House S., Hatfield
Metcalfe, N.A. *ma.*
Market Bosworth Gram. S.
Morgan, H. Stafford Coll., Forest Hill
Sterling, F.H. *d.*
Sir Walter St. John's S., Battersea
Smeed, E. *d.* St. Paul's S., West Kensington
Aitchison, H. *d.* Hutton Gram. S.
Barker, W.D.G. Kingswood School, Bath
Brown, A.C. *phys.d.*
Mundella Higher Elem. S., Nottingham

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BOYS, 2ND CLASS, HONS.—*Continued.*

Stevenson, G.E. *f.* St. George's Coll., Weybridge
Fargher, R.H. *d.* Douglas Secondary S.

English, M.W. *s.* Dagmar H., Hatfield
Grant, R.A.P. *f.* Gram. S., Ealing
Palmer, H.F. *d.* Mundella Higher Elem. S., Nottingham
Smith, K.R. Market Bosworth Gram. S.

Cowin, F. *phys.* Douglas Secondary S.
Crouch, A.B. Sir Walter St. John's S., Battersea
Eardley-Wilmot, V.L. *d.* KensingtonCoach'gColl., NevernSq., S.W.
Leedham, L.C. *d.* St. Paul's S., West Kensington
Mealin, O.F. *phys.d.* Mundella Higher Elem. S., Nottingham
Sheriff, S.H. *phys.d.* St. Marylebone Central S., W.
Walker, H. *f.* St. Peter'sColl., Westminster

Duffy, T. *d.* St. Joseph's Comm. Coll., Dumfries
Martin, A. *h.d.* Tollington Schools, N.
Maynard, G.H. *ma.* Northgate S., Ipswich
Muraille, C. *al.* St. Joseph's Acad., Kennington Rd., S.E.

Bellis, A.H. Oswestry School
Cradock, F.R. *phys.d.* Bible Christian Coll., Shebbear
Dicks, V.F. *al.* Kent House Coll., Anerley
Lilly, G.A. St. Paul's S., West Kensington
Rundle, R.H. Bible Christian Coll., Shebbear
Verstraete, J.J.A. *f.d.* Catholic Coll. Institute, Manchester

Church, J.E. *a.ch.d.* Surrey Lane Higher-Grade S., Battersea
Hedgecock, A.T. *ch.d.* Wright's S. Faversham
Sanbrook, F. *d.* Technical Day S., Walsall

Callaway, W.B. Tollington Schools, N.
Dotto, J. *f.* Christian Brothers' Coll., Gibraltar
Greenwood, F.D. *f.d.* Sir William Borlase's S., Marlow
Kelly, E. *mu.d.* Douglas Secondary S.
Oldland, R.W. Lindisfarne Coll., Westcliff-on-Sea
Ramagge, A. *f.* Christian Brothers' Coll., Gibraltar
Rodwell, H.J. *d.* Mundella Higher Elem. S., Nottingham
Seaman, J.E. *s.* Northgate S., Ipswich

Danziger, S. *g.f.* Private tuition
Hackett, S.M. *h.d.* Market Bosworth Gram. S.
Smith, J.A. *d.* NorthernPolytechnicDayS., Holloway, N.

Alexander, H.L. Taunton's Trade S., Southampton
Charlier, L. *a.* St. Aloysius' S., Hornsey Lane
Prince, G.M. *bk.ch.d.* Brewood Gram. S.
Sellick, L.A. *s.* Tavistock Gram. S.

Bloodworth, E.C. Tollington Schools, N.
Muirhead, L. *s.* Ruthin Gram. S.
Polkinghorne, E.S. *f.* TollingtonSchools, N.
Wiseman, H.J. *d.* Northgate S., Ipswich

Littler, W.B. *f.ma.* Private tuition
Smales, P.G. *ma.d.* Brighton Gram. S.
Smith, A. *s.* HarboroughGram.S., MarketHarborough
Tilley, J.V. *f.ch.d.* Montrose Coll., Brixton Hill

Kerr, F.A. *d.* St. Joseph's Comm. Coll., Dumfries

Amos, T. Higher-Grade S., Carlisle
Beare, E.W. Taunton's Trade S., Southampton
Berry, N.W. Private tuition
Button, J.W. *ch.* Technical Day S., Walsall
Hollingworth, G.T. *f.* Sir William Borlase's S., Marlow
List, A.P. St. Paul's S., West Kensington
Owen, S.J. *d.* Wreight's S., Faversham
Wood, R. *a.* Snettisham School

SECOND CLASS [*or JUNIOR*].

Pass Division.

[1]Bateson, R.H. *d.* Hutton Gram. S.
[1]Shaw, G.B. Hutton Gram. S.
[1]Tarn, F.G. *ch.* Private tuition
[1]Foxwell, H.S. Addey & Stanhope S., NewCrossRd., S.E.
[1]Maplesden, E. University S., Rochester
[1]Rivers, G. Tollington Schools, N.
[1]Hodge, H.P. 38, Tavistock Place, Plymouth
[1]Squires, J.W.L. University S., Rochester

[1]Diss, H.C. *d.* Hutton Gram. S.
[1]Dutton, C. Hutton Gram. S.
[1]Elliott, T. Penistone Gram. S.
[1]Leivers, G.S. *ms.* N. London High S., EtonRd., Hampstead
[1]Moseley, J.G. Felsted School
[1]Taylor, C.B. Hutton Gram. S.

Beale, A.V. Sir Walter St. John's S., Battersea
Cannon, L. Hutton Gram. S.
Cowper, J.F. *d.* VictoriaParkS., Manchester
Hampton, R.Q. *d.* Douglas Secondary S.
[1]Kent, T.R. Sir William Borlase's S., Marlow
[1]Lauderdale, E.O. Comm. S., Ripley
[1]McMahon, F. Taunton's Trade S., Southampton
Slack, F. *d.* Mundella Higher Elem. S., Nottingham

Kilner, H.B. *f.* Pierremont Coll., Broadstairs
Sparke, E. *ma.* Rutherford Coll., Newcastle-on-Tyne
Vine, S.B. LeedsInstituteModernS. Leeds
Watson, A. *d.* Clark'sCiv.Serv.Coll., ChanceryLane, W.C.

Burch, S.J. *al.gm.d.* St.James'sS., Keyham
Davison, J.E. *d.* Rutherford Coll., Newcastle-on-Tyne
Fulton, T.F.S. *gm.* S.forSonsofMissionaries, Blackheath, S.E.
Wardman, O. *f.* Private tuition
Webber, F. Sir Walter St. John's S., Battersea
Wills, T.E. *gm.* DunhevedColl., Launceston

Butcher, E.O. *d.* Northgate S., Ipswich
Cupper, H.J. *d.* Sir William Borlase's S., Marlow
Dawe, R.E. Uckfield Gram. S.
Lawrence, L.E. Tollington Schools, N.
Pulling, J.B. *l.gr.* Private tuition
Reynolds, W.A. *f.* LongfleetHighS., Poole
Sagar, W.H. *d.* Arnold House, Blackpool
Todd, J. *d.* Higher-Grade S., Carlisle
Wallbank, T. Hutton Gram. S.

Cheeseman, H.H. *a.* Tettenhall Coll.
Ely, T.G. Taunton'sTradeS., Southampton
Harrington, B.L. The Douglas S., Cheltenham
Herbertson, W. *c.h.* Rutherford Coll., Newcastle-on-Tyne
James, T.H. Private tuition
Lodge, T.A. *d.* Epsom College
Maynard, T. Bethany H., Goudhurst

Davis, J.W. *a.* Surrey Lane Higher-Grade S., Battersea
Forster, C.M. Wellington Coll., Berkshire
Gugenheim, T. Oxford H., Junction Rd., N.
Morris, W.T. University S., Rochester
Rash, C.E. Eye Gram. S.
Rundle, F.J. BibleChristianColl., Shebbear
[1]Tyack, J.S.B. Duneved Coll., Launceston
Ward, A.L. *h.* Bethany H., Goudhurst

Allen, F.W. *d.* Mundella Higher Elem. S., Nottingham
[1]Emery, B.J. Modern S., Lowestoft
Franks, F. Yorkshire Soc.S., WestminsterBridge Rd.
Gutteridge, B.G. VictoriaTutorialColl., BuckinghamPal.Rd
Martin, H., *f.* St. Joseph's Comm. Coll., Dumfries
Titterington, W.W. *ma.* Hutton Gram. S.
Warne, E.G. *d.* Mercers' School, Holborn, E.C.
Whitehurst, G.W. *d.* Catholic Coll. Institute, Manchester

[1]Cox, P.J. St. George's Coll., Weybridge
[1]Earnshaw, N. University S., Southport
Harrison, S.F. *d.* Technical Day S., Walsall
Smith, S.J. Bible ChristianColl., Shebbear
Smithies, A. *f.d.* Gram. S., Wilmslow
Terry, R.V. Sir Walter St. John's S., Battersea
Trethewey, W.R. Tavistock Gram. S.

Bryant, G.M. *a.d.* Private tuition
[1]Ellis, T. Bethany H., Goudhurst
Gooding, C. *d.* Sir Andrew Judd's S., Tonbridge
Hudson, J. *a.* Higher-Grade S., Carlisle
Huntley, H.G. *ma.d.* Englefield H., Highbury, N.
Seelly, E.St.J. *f.* Private tuition
Smith, H. *d.* Thorne Gram. S.
Tame, H.G. Sir William Borlase's S., Marlow
Taylor, S.A. Comm. S., Ripley

Austin, G.M. *d.* Technical Day S., Walsall
Aston, R.N. Bethany H., Goudhurst
Brook, F.H. Fartown Gram. S., Huddersfield
Harrison, G.S. Queen's Park Coll., Harrow Rd., W.
Hodge, L.C. *d.* Sir Andrew Judd's S., Tonbridge
Hogg, G.E. *ch.* Rutherford Coll., Newcastle-on-Tyne
Kelsey, A.R. *ch.d.* Maldon Gram. S.
Maynard, A.E. *a.d.* Sir Andrew Judd's S., Tonbridge
Silley, C.C. *f.* Lindisfarne Coll., Westcliff-on-Sea
Willson, E.C. Montrose Coll., Brixton Hill
Wivell, A. Hutton Gram. S.

Barker, A.L. Tollington Schools, N.
Bedford, F. Sir Walter St. John's S., Battersea

Bonell, J.A. Sir Walter St. John's S., Battersea
De la Feld, M. *a.* St. Joseph's Coll., Beulah Hill, S.E.
Edmondson, E.B. *d.* Mundella Higher Elem. S., Nottingham
Graves, W.R. Bethany H., Goudhurst
Hodgson, W.A. Private tuition
Hudson, C. St. Aloysius' S., Hornsey Lane
Langdon, C.W. Private tuition
Livock, A.R. Tollington Schools, N.
Todd, L.D. Queen's Park Coll., Harrow Rd., W.
Wade, A.C. Montrose H., Plymouth

Armstrong, J.C. *gr.* Wellington Coll., Berkshire
Blane, E.R. Hutton Gram. S.
[1]Dalby, W. Gram. S., Eccles
Eastham, W. *d.* Hutton Gram. S.
Heathcote, C.A. *d.* Brunt's Technical S., Mansfield
Holthusen, B. *d.* Brent Hill S., Hanwell
King, F.H. *f.* 64 Perham Rd., W. Kensington
King, S.H. *a.* Tollington Schools, N.
Lee, E.A. Tollington Schools, N.
Morley, H.W. *f.* The Modern S., East Grinstead
Prince, F.G. Lancaster Coll., W. Norwood
Taylor, R. Bethany H., Goudhurst
[1]Woodcock, N.A. Fartown Gram. S., Huddersfield

[1]Coulson, A.G. Stationers'Co.'s S., Hornsey
Gleave, J.W. *d.* The High S., Formby
Jennings, O.C. *d.* Brunt's Technical S., Mansfield
Newbery, R. Tudor Hall, Hawkhurst
Palmer, W.E. *d.* Wreight's S., Faversham
Wedge, B.W. Taunton's Trade S., Southampton

Bonser, J.A. Market Bosworth Gram. S.
Eves, H.C. *s.* Maldon Gram S.
Fearnley, W.H. HuntingdonH., Teddington
Higham, J.P. *f.* Arnold House, Blackpool
Hoole, H.W. Montrose Coll., Brixton Hill
Kelly, E. KensingtonCoach'gColl., NevernSq., S.W.
Neale, W.E. Private tuition
Sharp, T.A. Maldon Gram. S.
[1]Wilkinson, A.A. Kingsbridge Gram. S.

Davis, B.L. Penistone Gram. S.
[1]Dulley, H.W. Private tuition
Field, E.E. Rye Gram. S.
[1]Richards, J.S. *gm.* Arnold Coll., Swansea
Rosser, S. St. Mary's Hall S., Cardiff

Bridges, H.A.B. *f.* Charterhouse S., Godalming
Brown, H.D. St. Helen's Coll., Southsea
Clark, E.S. Taunton School
Dimes, D.H. Kingsbridge Gram. S.
Dowsing, G.S. Mercers' S., Holborn, E.C.
[1]Godwin, L.J. *d.* Bethany H., Goudhurst
[1]Hodson, J.V.W. Brighton College
King, H.E. University S., Southport
Neal, F.J. *d.* Private tuition
Pritchard, C.R. Technical Day S., Walsall
Richards, F.W. Taunton's Trade S., Southampton
Swabey, W.G. Comm. S., Ripley

[1]Ainsworth, W.T. Private tuition
[1]Chilton, E.A. Uckfield Gram. S.
[1]Collins, C.E. Private tuition
Cozens, P. Taunton School
Loten, B.F. St. Bede's Coll., Hornsea
Porter, H. Hutton Gram. S.
Smith, R.W. ModernS., Newcastle-on-Tyne
Stenner, C.L.R. *d.* King Edward's Gram. S., Aston
Taylor, E.K. Private tuition
[1]Waddington, C.G. Private tuition
Whittington, G. *f.* Private tuition
[1]Williams, G.W.O. County S., Dolgelley

Gilley, P.J. *d.* Sir William Borlase's S., Marlow
Highatt, R.C. Trafalgar H., Lee-on-Solent
[1]Law, F.P. Private tuition
Parkins, J.H. *d.* Culham College S., Abingdon
Philpot, A.J. Taunton School
Pritchard, E.F.D. *f.d.* Private tuition
Whitty, P.J. St. George's Coll., Weybridge

Bentley, T. *d.* Fartown Gram. S., Huddersfield
[1]Forster, S.R. Thorne Gram. S.
Jeffery, F.B. Tavistock Gram. S.
Millican, C.G. *d.* Higher-Grade S., Carlisle
Snow, F.B. University S., Rochester
Wright, C.E. Gram. S., Ealing

Bartholomew, G. Tollington Schools, N.
Burrett, A.H. *d.* Sir William Borlase's S., Marlow
[1]Christie, E.E. Private tuition
[1]Goudie, W.J. Kingswood School, Bath
Hargreaves, G.M. University S., Southport
Hodgson, H.A. *d.* Yorkshire Soc.S., WestminsterBridgeRd.
Lanchester, J. King James I. Gram.S., Bishop Auckland
Leonard, A.E. *d.* Sir Andrew Judd's S., Tonbridge
Stafford, N. *f.* University S., Southport

Tokeley, H.E. Tollington Schools, N.
White, A.R. *d.* Private tuition
[1]Williams, E.R. *d.* Hoe Gram. S., Plymouth
[1]Wyatt, F.H. Maldon Gram. S.

[1]Bower, G. Snettisham School
Dunham, A.E. *bk.d.* Dagmar H., Hatfield
Griffiths, R.T. *f.* Gram. & Coll. S., Carnarvon
[1]Hammond, F.H.R. Grammar S., Forest Gate
Jackson, H.T. University S., Southport
[1]Mace, E.R. Hythe School
[1]Power, W.G. Uckfield Gram. S.
[1]Wright, T.W.W. Derwent H., Bamford

Ensor, W.W. *bk.* Grove H., Highgate
Hodder, G. Kingswood School, Bath
Ireland-Jones, J.H. *d.* Sir William Borlase's S., Marlow
Margerison, L.A. Gram. S., Fulwood, Preston
Marks, C. Private tuition
Musgrave, T. *d.* Higher-Grade S., Carlisle
Oldfield, P.J. Taunton's Trade S., Southampton
Roadley, T.S. *phys.d.* Mundella Higher Elem. S., Nottingham
Rosher, A.B. *d.* St. Paul's S., West Kensington
Rushton, A. *f.* Hutton Gram. S.
Smith, D.D. Argyle H., Sunderland
Smith, W.A. Taunton's Trade S., Southampton

Armitage, H.G.P. *f.* Private tuition
Barkell, W.S. Tavistock Gram. S.
6210 Private tuition
[1]Bevington, G. Tollington Schools, N.
Cornford, H. *d.* Wreight's S., Faversham
Glover, H.H. *d.* Mundella Higher Elem. S., Nottingham
Hallett, F.W.M. Brondesbury Coll., WillesdenLane, N.W.
Harrington, E. *d.* Sir Andrew Judd's S., Tonbridge
Jones, M. Lindisfarne Coll., Westcliff-on-Sea
Larkworthy, F.A. *phys.* Bible Christian Coll., Shebbear
Williams, C.G. *f.* Hazelcroft, Weston-super-Mare
Wood, F.J. *d.* YorkshireSoc. S., WestminsterBridgeRd.

[1]Dunn, C.C. Ruthin Gram. S.
Dyson, A.E. Gram. S., Chorlton-cum-Hardy
Milton, L. Abbey S., Penzance
Rayment, J.C. *d.* Dagmar H., Hatfield
Tanner, G.W. *d.* Sir Walter St. John's S., Battersea
Underwood, W.E. HarboroughGram.S., MarketHarborough
Williams, H.F. Pierremont Coll., Broadstairs

Barley, L.J. Taunton's Trade S., Southampton
Bickell, H.S. Taunton's Trade S., Southampton
Cope, V.S.M. *ch.* Private tuition
Jones, A.R. *d.* Mundella Higher Elem. S., Nottingham
Pimm, A. Channel View S., Clevedon
[1]Walters, W. St. Joseph's Acad., Kennington Rd., S.E.

[1]Addison, P.F. Horsmonden School
Allen, S.E. *s.a.* Snettisham School
Betts, B. Talbot H., Old Trafford
Firth, F. Salesian S., Battersea, S.W.
Flynn, J. St. Joseph's Comm. Coll., Dumfries
Grant, K.G. Private tuition
Hillyer, E.R.V. St. John's Choir S., St. Leonards
[1]Hollaway, B.E.d. Wreight'sS., Faversham
Keighley, O. *f.* Private tuition
Medland, G.B. Tollington Schools, N.
Welsh, C.C. *f.* Epsom Coll.

Betts, H.E. Gram. S., Ealing
Rees, T.O. *a.* Cawley S., Chichester
Reynolds, T.W. *ch.* Taunton School
Ruck, C.F.L. The Douglas S., Cheltenham
Rundle, S.P. Bible Christian Coll., Shebbear
Scott, A.G. Private tuition
[1]Stedman, P.H. Private tuition

Bradnam, C.H. *a.* Private tuition
Brain, H.V. The Modern S., East Grinstead
[1]Cotton, C.A. Boys' High S., Wareham
Dawson, V.H.L. *d.* Gram. S., Wilmslow
Delo Dosuma, A.O. African Training Inst., Colwyn Bay
Donnelly, L.J. *d.* Sir Walter St. John's S., Battersea
[1]Horton, W.S. Sherborne School
Ingram, W.L. *f.* Private tuition
Mahoney, P. St. Joseph's Coll., Beulah Hill, S.E.
[1]McKee, D. Harlesden College, N.W.
Miller, H.P. *d.* Tettenhall College
[1]Moon, V. Brunswick H., Maidstone
[1]Paterson, C. Private tuition
Perceval, J.L. West Cliff Coll., Ramsgate

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BOYS, 2ND CLASS, PASS—*Continued.*

Smith, S. *d.*
Osborne High S., W. Hartlepool
Brown, A.N. Hutton Gram. S.
[1]Conton, C.B.
African Training Inst., Colwyn Bay
Graham, J.J. *d.* Higher-Grade S., Carlisle
Grant, A.E. Higher-Grade S., Porth
Lander, F. Secondary Day S., Plymouth
[1]Long, J. Eye Gram. S.
MacPherson, W.
Taunton's Trade S., Southampton
Mortimer, R. Wallingbrook, Chulmleigh
Pearson, T.H. *ma.*
Market Bosworth Gram. S.
Tiernan, E.
Catholic Coll. Institute, Manchester
Trotter, C.H. *d.*
HarboroughGram.S., MarketHarborough

Craggs, H. *ma. d.*
Rutherford Coll., Newcastle-on-Tyne
Dean, H.W.
Sir William Borlase's S., Marlow
Hall, C. Private tuition
Taylor, S. Tollington Schools, N.
Watson, C.T. Stockton-on-Tees Gram. S.
Wynne, W. Gram. S., Ealing

Bornheim, J. St. Aloysius'S., HornseyLane
Boughton, A. *f.* Tollington Schools, N.
Clews, J.P. Ruthin Gram. S.
Coll, H. ChristianBrothers'Coll., Gibraltar
Davidson, C.L. *d.* Wreight's S., Faversham
Fentum, C.A. *d.*
Melbourne Coll., Anerley, S.E.
Fripp, J.T. Private tuition
Hoskin, P.J. Wadham S., Liskeard
Shaw Crisp, C. *d.* Private tuition
[1]Shaw, R.P. Private tuition
Riley, J.C.
Lindisfarne Coll., Westcliff-on-Sea
Waters, J. Silesia Coll., Barnet
Wilson, J.E.S. Private tuition

[1]Adams, W.L. Private tuition
Dias, A. Private tuition
Fitt, H.F. Uckfield Gram. S.
Grant, H.D. Private tuition
[1]Halliwell, C. Murray Boys' S., Rugby
Jukes, T.S.
Taunton's Trade S., Southampton
Markham, W.C. Maldon Gram. S.
Radcliffe, S.H. MontroseColl., BrixtonHill
[1]Steeple, H. Private tuition
Wigan, C.L. Private tuition

Allshorn, F.S. Grove H., Highgate
Black, T.R. Hutton Gram. S.
Dalton, E.N. Oxford H., South Croydon
Falconer, R.J.
Taunton's Trade S., Southampton
[1]Hyde, A.A.
N.LondonHighS., EtonRd., Hampstead
Pettman, S.E. *d.*
Melbourne Coll., Anerley, S.E.
Preston, G.L. Private tuition
Stott, J.H. Gram. S., Eccles
Symons, W.
Sir James Smyth's Gram. S., Camelford
Trapnell, B.E.W. Hythe School

Beckwith, A. *phys.d.*
Mundella Higher Elem. S., Nottingham
Collister, J.E. Clothworkers'SeniorS., Peel
Edwards, C. Uckfield Gram. S.
Edwards, P.G. The Coll., Weston-s.-Mare
Granville, C. Cleave's Endowed S., Yalding
Gretton, J.E. *d.* Technical Day S., Walsall
[1]Harrison, G.K. Kingswood School, Bath
Merefield, P. St. Aloysius' S., HornseyLane
O'Connor, D.P.
St. George's Coll., Weybridge
[1]Peake, T.M. Private tuition
Wickens, P. Wreight's S., Faversham
Wilson, L.W.
Pitman's Metropolitan S., W.C.

Baxter, C.S. StonyhurstColl., nr. Blackburn
Braithwaite, P.D. High S., Kirkby Stephen
Cheesman, C.A. *d.* Snettisham School
Davies, F.L. St. Deiniol's, Upper Bangor
Farrell, J.
St. Joseph's Comm. Coll., Dumfries
[1]Fibbens, C.W. Gram. S., Worthing
Rowe, W.A. Abbey S., Penzance
[1]Sharp, J.B. Private tuition
Showler, E.S. *d.* Tollington Schools, N.
Warren, T.H. *d.*
Battersea Polytechnic Science S., S.W.
Wicker, J.B. *s.* Ivy House, Wallington
[1]Wood, L. Hythe School

Bentley, T.H.
Grimshaw St. British S., Preston
[1]Bingley, C.H. Grove H., Highgate
Clark, C.B.
Taunton's Trade S., Southampton
Ditcham, V. *d.*
King Edward VI. Gram. S., Southampton
Gilbertson, H.M. Epsom Coll.
Harvey, J.L.B. Market Bosworth Gram. S.
O'Brien Ross, F.
St. Joseph's Acad., Kennington Rd., S.E.
Williams, R.H. *s.* Ruthin Gram. S.

Baker, J.H. Bethany H., Goudhurst
Brunnen, L.W.G. UniversityS., Rochester
[1]Byrne, P.
St. Joseph's Acad., Kennington Rd. S.E.
Cole, A.L. Southport Modern S.
Flower, W.C. Eye Gram. S.
[1]Fouracre, F.W Tollington Schools, N.
Goult, E.M.
The Cusack Inst., Moorfields, E.C.
Lanham, L.H. *d.* Taplow Gram. S.
O Farrell, J.
St. Joseph's Coll., Beulah Hill, S.E.
Owens, J.H. *f.* Fauconberge S., Beccles
Reddish, E.G. Market Bosworth Gram. S.
Rippon, T.S. Private tuition
Turner, E.V.B. Private tuition

Farr, F.E. *d.* Uckfield Gram. S.
Haylock, O. *d.*
Mundella Higher Elem. S., Nottingham
Hounam, J.D. Tollington Schools, N.
Martin, A. Bethany H., Goudhurst
Needam, O. Market Bosworth Gram. S.
Morgan, H.L. Grove H., Highgate
Mumby, G.C.R. Private tuition
Smith, J.W. Market Bosworth Gram. S.
Spencer, L.S. Kingswood School, Bath
Thoburn, H.F. Kent House Coll., Anerley
[1]Webb, J.D. Gram. S., Newton Abbot

Cock, M.C.D. *f.* Richmond Hill S.
Gale, B.W. *d.* Kent House Coll., Anerley
Jones, G.L. *d.* Gram. S., Pencader
Jull, R.S. *d.*
Sir Andrew Judd's S., Tonbridge
McCully, D. Private tuition
Rowntree, T. *d.*
YorkshireSoc.S., WestminsterBridgeRd.
Toy, H.S. Dunheved Coll., Launceston
Whitfield, J.N. *phys.ch.* Tettenhall College
Wright, F.C. *d.* Kent House Coll., Anerley
Zerlendi, A. *f.* Holmwood, S., Bexhill
Unsworth, W. *d.*
St. Joseph's Comm. Coll., Dumfries

Dale-James, K.S. Private tuition
Fletcher, N.J. Private tuition
Hives, G.E. *d.*
Mundella Higher Elem. S., Nottingham
Mussared, S.H. *d.*
St. Dunstan's Coll., Margate
Piper, W. Daventry School
Spain, H.G. Private tuition

Abbott, C.H. Bethany H., Goudhurst
Andrew, R.T.
Bible Christian Coll., Shebbear
Attkins, W.E. Grove H., Highgate
Fiddick, T.L. Private tuition
Higgins, D.A. Private tuition
Kennedy, C. Catholic Coll. S., Lytham
MacNamara, C.
St. Joseph's Acad, Kennington Rd., S.E.
[1]Ritchie, A., Boys' High S., Iron Bridge
Stokes, W.A. Tettenhall Coll.

Beddoes, W. Boys' High S., Iron Bridge
Boyce, H.W.J. Tudor Hall, Hawkhurst
[1]Guard, H. Private tuition
[1]Kelman, G.A.E. Private tuition
Newbury, A.H. *d.*
Mundella Higher Elem. S., Nottingham
Roberts, G.H. Ruthin Gram. S.
Snow, F. Private tuition
Warburton, P. Derwent H., Bamford
Williams, J.W.
S. Wales Tutorial Classes, Cardiff

Benson, J. King Edward VI. S., Bath
[1]Crundall, A.H. Tudor Hall, Hawkhurst
Fearman, A.H. Tollington Schools, N.
[1]Harris, C.P. Cleveland H., Salisbury
Ormrod, J. *d.* Private tuition
Ruben, E. Private tuition

Ferguson, A.D. Private tuition
[1]Jamieson, M.J. Private tuition
Jones, O.C. *s.* Ruthin Gram. S.
Langley, L.S. Private tuition
Mallan, V.L.V. Private tuition
Matson, C. The Modern S., East Grinstead
Moncrieff, S. Gram. S., Ealing
Thompson, T.H. Higher-Grade S., Carlisle
[1]Widdowson, R. Private tuition
Wood, E.H. *d.* Battle Hill S., Hexham

Hyde, S. *d.*
Mundella Higher Elem. S., Nottingham
Langley, E.P. Epsom College
Sandford, F.T. *d.*
Fartown Gram. S., Huddersfield
Stockley, J.
Taunton's Trade S. Southampton

Browning, B. Hyde H., Eastbourne
Code, G.B. *s.* Private tuition
Goodall, B.W. New Coll., Harpenden
Green, J.S. *a.* Lancaster Coll., W. Norwood
[1]Hallum, W.B.
Taunton's Trade S., Southampton
Jode, S.A. *d.* Lancaster Coll., W. Norwood
Leatherby, L.H. *d.* Private tuition
Morford, J.B.
African Training Inst., Colwyn Bay
Smith, A.G. *d.*
Mundella Higher Elem. S, Nottingham
Stott, H.W. Oswestry School
Tarren, H.J.R.
Hillmartin Coll., Camden Rd., N.W.
[1]Vereker, H.A.
St. George's Coll., Weybridge
Becker, H.S. *d.*
St. Boniface's Coll, Plymouth
Bishop, E. *d.* Brent Hill S., Hanwell
Boal-r, A.
Mundella Higher Elem. S., Nottingham
Cowdroy, A.A.H. Private tuition
Green, J.C.
St. Joseph's Comm. Coll., Dumfries
Hill, E. Private tuition
Hill, W.G. West Cliff Coll., Ramsgate
Hudson, M.
St. Aloysius' S., Hornsey Lane
Lang, W.S. Private tuition
[1]Lawson, W.E.
Waterloo & Seaforth Inst., Seaforth
Nash, W. Cleave's Endowed S., Yalding
Nation, A.J. Gram. S., Ealing
Turner, S.A. Taunton H., Brighton

Jones, H.W. County S., Carnarvon
McIntyre, F.H. Stafford Coll., Forest Hill
Oliver, A.A.
St. John's Coll., Southend-on-Sea
Taylor, J. Tollington Schools, N.
Watson, A.J. *ch.* Private tuition

Herbert, A.H. Bedford H., Oxford
James, E.L. Newquay Gram. S.

Atwill, K.S. *d.* Private tuition
Fickling, E.L.Z.
VictoriaTutorialColl., BuckinghamPal.Rd.
Hamilton, W.W.F.
United Kingdom Coll., LavenderHill, S.W.
Hill, F.A. Private tuition
Hough, G.H. Wigan Institute
Kendall, W.H.
HarboroughGram.S., MarketHarborough
[1]Lewis, W.
WesleyanMiddleClassS., GaisfordSt., N.W.
[1]Metcalfe, W.W. High S., Kirkby Stephen
Sampson, E.S. Private tuition
Savory, C.J. Bethany H., Goudhurst
Stamper, E.P.F.
64 Perham Rd., W. Kensington
Strawson, F.G. Queen's Coll., Taunton
Whittington, W.W. Private tuition

[1]Blake, E.W. Portsmouth Gram. S.
Linton, W. Oxford H., South Croydon
Pfenninger, J.O. *gm.* Private tuition
Salomon, E. University S., Southport
Sowerby, R.R. High S., Kirkby Stephen

Earle, H.A. Hythe School
Gosling, C.L. St. George's Coll., Weybridge
[1]Hewson, S.B. Stationers' Co.'s S., Hornsey
Lupton, J.P.
Carlyon Coll., Chancery Lane, W.C.
Morris, A.D. *ch.* Taunton School
Nicholson, T.B.C. Trevah S., Newquay
Wain, D. Gram. S., Belper
Wilkinson, P.
Longwood Gram. S., Huddersfield

Griffiths, J.T. Gram. & Coll. S., Carnarvon
Henderson, A.E. Holt H., Cheshunt
Hutchings, B.
Bible Christian Coll., Shebbear
Jenner, C.G.
143 Ashburnham Rd., Hastings
Potter, W.McQ. Dunstable Gram. S.
Roberts, A.C. *s.* Ruthin Gram. S.
Stephenson, J. Battle Hill S., Hexham

Clayton, J. University S., Southport
Harrington, W.J.J.
The Douglas S., Cheltenham
Manton, W.B. Gram. S., Ealing
Pugh, C. Gram. S., Chorlton-cum-Hardy
Sim, J. *f.* Private tuition
Simpson, E.J. Private tuition
Thorpe H.
Longwood Gram. S., Huddersfield
Vyvyan, R. *d.*
Sir James Smyth's Gram. S., Camelford

Addison, H.
Yorkshire Soc. S., WestminsterBridgeRd.
Griffiths, J. Whitland County S., Llanfair
Henning, H. Private tuition
Holmes, H.M.
Taunton's Trade S., Southampton
Smith, W.L. Tollington Schools, N.
Tushy, P.G. *f.* Wynport H., Brighton

Beattie, J. Public S., Kelso
Broad, P.R. Brighton Gram. S.
Buchanan, P.M.G.R. *d.*
Sir William Borlase's S., Marlow
Ogle, J.E. Taunton School
Oxley, F.R. Mount Hermon S., Woking
Salt, D.H. St. George's Coll., Weybridge
Stockley, W.
Taunton's Trade S., Southampton
Tiernan, H. StonyhurstColl., nr. Blackburn
[1]Tyack, W.D. Dunheved Coll., Launceston
Tyler, R. *d.* St. Catharine's S., Broxbourne

Bamford, T.J. The Douglas S., Cheltenham
[1]Dardart, L.C. Weston S., Bath
Eliahu (Mizrackee), J. *f.* Private tuition
France, J.H. Private tuition
Grimwood, E.
Stonyhurst Coll., nr. Blackburn
Harris, T.J. Pierremont Coll., Broadstairs
Jones, J.G.
S. Wales Tutorial Classes, Cardiff
Ling, C.W. Brighton Gram. S.
Matthews, C.V. Tettenhall College
McRae, D.G. *f.* Private tuition
Parkyn, E.Q. Secondary Day S., Plymouth
Whitworth, H.P. Epsom College
Winsland, D.F. Epsom College

Akester, A.G. *d.*
Mundella Higher Elem. S., Nottingham
Boucher, C.H. Brighton Gram. S.
Cornish, N. Battle Hill S., Hexham
Esilman, A. University S., Southport
Keith, G. *d.*
Rutherford Coll., Newcastle-on-Tyne
Maden, W.H. Private tuition
Newton, H.A.E. *d.*
Mundella Higher Elem. S., Nottingham
Rose, W.H.
Eastward Ho! Coll., Felixstowe
Scott, J. Private tuition
[1]Stevens, L.D. Horsmonden School
Strathman, F.W. Bailey S., Durham

Bennett, G.R.
Brynmelyn, Weston-super-Mare
Brown, B.J. Private tuition
Brown, J.R.A. Harlesden College, N.W.
Homewood, A.N.
Broomwood Coll., Clapham Common
Larkin, W. Bethany H., Goudhurst
Monks, H.G. Wigan Institute
[1]O'Donnell, B.L.
St. George's Coll., Weybridge
Scammell, F.B. Stafford Coll., Forest Hill
Steele, H.L.H. Norman Court, New Barnet
Thompson, C.V. Private tuition
Varney, J.O. Hounslow Comm. Coll.
Walley, C.S. The Modern S., Oswestry

Browne, H.M. Private tuition
Felton, P.W. Oswestry School
Fullylove, J.C. Epsom College
Petter, R.S. Highfield S., Chertsey

Brettell, W.H. *d.* Snettisham School
Burtinshaw, S.J. Tettenhall College
Clark, P.L. *d.* The Douglas S., Cheltenham
Dew, M. *d.* St. Catharine's S., Broxbourne
Goldie, A.H. *d.* LancasterColl. W. Norwood
Harrison, C. High S. for Boys, Croydon
Jones, G.O. Kingswood School, Bath
Richards, D.H. The Modern S., Oswestry
[1]Sadler, W.G. Stationers' Co.'s S., Hornsey
Wheeler, A.G.C. Tettenhall College

Burbidge, E.A. Warwick H., Southsea
Clarke, M. Salesian S., Battersea, S.W.
Evans, J.T. Gram. S., Ealing
[1]Gideon, C.S. Private tuition
Lees, I. Brewood Gram. S.
Pern, A.S. Alwyne Inst., Gower St., W.C.
Saunders, N.V. Private tuition
Tebbott, A.R. Gram. S., Belper
Woodroffe, N.F.
Sir William Borlase's S., Marlow

Bailey, R.J. Private tuition
[1]Brabazon, E. Newtown S., Waterford
Browne, H.M. MontroseColl., BrixtonHill
Crowther, L.B. Private tuition
Lang, L.W. Private tuition
Reader, A.W. Bethany H., Goudhurst
Trounce, T.R. Holt H., Cheshunt

[1]Burn, R.E.R. Private tuition
Crook, W.J.
St. Joseph's Comm. Coll., Dumfries
Dabbs, A.J. Private tuition
Jewell, F.E. St. John's Coll., Brixton
[1]Rines, E.T. The College, Scarborough
Williams, W.G. Private tuition

Arnfield, H. Private tuition
[1]Crisford, A.W. Rye Gram. S.
Foley, D. *d.*
St. Joseph's Acad., Kennington Rd., S.E.
Hargraves, H.E. Hanley Castle Gram. S.
[1]Hill, H.O. Private tuition
Holland, W.T. Gram. S., Eccles
Neal, P.T. Private tuition
Rant, G.H. Culham College S., Abingdon
Sheehan, W. St. Aloysius'S., HornseyLane
Blows, C.E. Private tuition
Cave, W.J. *d.* Arnold Coll., Swansea
Jepson, F. Private tuition
Morgan, A.W. Private tuition
Frost, H.R. *ge.*
Modern S., Newcastle-on-Tyne

Croft, G.W.
Mundella Higher Elem. S., Nottingham
Gaskell, H. Private tuition
Greenwood, J.E.
West Cliff Coll., Ramsgate
Leake, O.I. Hove College, Hove
Liddell, R.W. Tollington Schools, N.
Mills, C.E. University S., Southport
Nott, R.W. Private tuition
Pywell, C.H. Private tuition
Saxton, S. Private tuition
Tyrrell, E. Private tuition
Green, E.R. Private tuition
Hall, E.W.G. Culham College S., Abingdon
Lennox, F.S. TheColl., Weston-super-Mare
Woodrow, B. *d.*
St. Boniface's Coll., Plymouth

Brett, A.H. Private tuition
Briggs, G. Private tuition
Draper, H.P. Tutorial S., Penarth
Harrington, A.J. Private tuition
Jones, S. Boys' High S., Iron Bridge
Phillips, G.S. Old Coll. S., Carmarthen
Salmon, H.M. St. Mary's Hall S., Cardiff

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THIRD CLASS.
Honours Division.

Boulton, A. *e.g.a.al.gm.d.*
Tollington Schools, N.
Phelan, A.E. *e.g.f.d.*
People's Coll., Nottingham
Raine, J.R. *e.g.f.d.*
People's Coll., Nottingham
Easom, A. *e.g.gm.f.ch.*
People's Coll., Nottingham
Hutton, S. *g.a.gm.f.d.*
People's Coll., Nottingham
Mercer, S. *e.ch.* Brewood Gram. S.
Swain, E.R. *e.a.gm.f.d.*
People's Coll., Nottingham
Crossland, S.G.W. *e.g.f.d.*
People's Coll., Nottingham
Hill, H. *g.f.d.* People's Coll., Nottingham
Green, A. *e.a.gm.f.d.*
People's Coll., Nottingham
Garavaglia, L. *e.f.i.*
St. Joseph's Coll., Beulah Hill, S.E.
Dunn, H. *g.a.f.d.* People'sColl., Nottingham
Jackson, J.W. *e.a.gm.f.d.*
People's Coll., Nottingham
Tompkin, L.M. *d.*
People's Coll., Nottingham
Waik, L.F. *g.a.f.d.*
People's Coll., Nottingham
Walker, A.S. *a.f.d.*
People's Coll., Nottingham
Penney, C.L. *a.gm.d.*
People's Coll., Nottingham
Littlefair, J. *d.* People's Coll., Nottingham
Bradbury, A.J. *e.f.d.*
People's Coll., Nottingham
Briens, A. *gm.d.* People'sColl., Nottingham
Harvey, F.G. *g.d.*
People's Coll., Nottingham
Lloyd, E.G. *a.d.* People'sColl., Nottingham
McMullen, D.J. *s.h.a.d.*
Lindisfarne Coll., Westcliff-on-Sea
Hart. W.L. *e.gm.d.* Tollington Schools, N.
Bent, M.D. *e.g.a.* Tollington Schools, N.
Dann, W.L. *e.g.a.al.f.l.*
Wirksworth Gram. S.
Garner, H.M. *g.a.gm.*
Market Bosworth Gram. S.
Underhay, A.E. *a.al.* TollingtonSchools, N.
Craine, J.H. *a.gm.* Douglas Secondary S.
Fargher, R.G. *e.a.* Douglas Secondary S.
Taylor, F.J.E. *e.g.a.gm.f.*
Clark'sColl.S.forBoys, HollowayRd., N.
Dodwell, C. *e.a.al.gm.* TollingtonSchools, N.
Avendano, L. *sp.*
St. Joseph's Acad., Kennington Rd., S.E.
Canessa, A. *e.a.f.*
Christian Brothers' Coll., Gibraltar
Rugeroni, J.V. *e.sp.*
Christian Brothers' Coll., Gibraltar
Yates, A.B. *a.gm.* Gram. S., Eccles
Coulson, A.H. *e.a.al.* TollingtonSchools, N.
Dann, E.J. *g.f.d.* Wirksworth Gram. S.
Hill, C.A. *a.f.* People's Coll., Nottingham
Pickerill, R.C. *g.a.al.sc.*
Wirksworth Gram. S.
Timms, M.L. *a.gm.d.*
People's Coll., Nottingham
Tobitt, G.R. *e.g.f.*
Valentia H., South Norwood
Woodhouse, R.A. *e.g.ch.* Hutton Gram. S.
Crellin, D. *e.a.al.* Tollington Schools, N.
Paynter, A.G. *e.a.gm.d.* St. AsaphCountyS.
Quayle, W. *g.a.gm.sc.* DouglasSecondaryS.
Rednall, E.H. *a.d.* Eye Gram. S.
Wisher, F. *d.* People's Coll., Nottingham
Jones, B.O. *a.l.* Ruthin Gram. S.
Brown, J.G. *s.a.*
Lindisfarne Coll., Westcliff-on-Sea
Gilley, J. *e.a.gm.*
Sir William Borlase's S., Marlow
Green, W. *e.a.f.*
Catholic Coll. Institute, Manchester
Mee, H.G.W. *a.gm.d.*
People's Coll., Nottingham
Mitford, E.B. *e.g.gm.* Rhyl County S.
Price-Smith, R.T. *e.* Dagmar H., Hatfield
Renney, C.H. *e.al.* Argyle H., Sunderland
Gilmore, R. *gm.f.*
Catholic Coll. Institute, Manchester
Hamilton, H.C. *e.a.* TollingtonSchools, N.
McIntosh, G.W. *d.*
People's Coll., Nottingham
Spencer, J.G. *a.d.* Wirksworth Gram. S.
Cowley, J.W. *e.a.* Douglas Secondary S.
Fuller, R. *a.* Tollington Schools, N.
Joynes, A. *a.* People's Coll., Nottingham
Stevenson, F.N. *f.d.*
People's Coll., Nottingham
Barcroft, D.C. *a.d.* Douglas Secondary S.
Ferguson, F.G.
High Pavement Hr. Elem. S., Nottingham
Thayer, J. *s.g.a.d.*
Lindisfarne Coll., Westcliff-on-Sea
Walkden, C.P. *d.*
People's Coll., Nottingham
Walker, S.K. *e.f.sc.* Wirksworth Gram. S.
Caillean, M. *f.a.e.*
St. Joseph's Coll., Beulah Hill, S.E.
Caley, A.E. *sc.* Douglas Secondary S.
Colchester, S. *e.d.* Eye Gram. S.
Hall, G.S. *g.a.f.l.* Wirksworth Gram. S.
Harvey, C. *e.g.a.* Brent Hill S., Hanwell
Higson, R. *g.f.* Hutton Gram. S.
Sparks, H. *a.al.gm.* Tollington Schools, N.
Crossland, R. *a.*
High Pavement Hr. Elem. S., Nottingham
Hodgson, N. *e.a.* Argyle H., Sunderland
Miller, D.B. *a.* Tollington Schools, N.
Morfitt, J. *d.* People's Coll., Nottingham
Osborn, L. *e.f.* Argyle H., Sunderland
Archer, H.T. *gm.d.*
Market Bosworth Gram. S.
Burton, E.W. *d.*
High Pavement Hr. Elem. S., Nottingham
Cabot, P.C. *s.sc.*
Bible Christian Coll., Shebbear
Coleman, R.J. *a.gm.*
Market Bosworth Gram. S.
Doidge, H. *g.a.* Higher-Grade S., Carlisle
Gandy, H. *e.g.a.f.* Wirksworth Gram. S.
Gaskell, G. *g.a.* Hutton Gram. S.
Harvey, L.W. *a.*
Market Bosworth Gram. S.
Herbert, A. *e.a.f.* Rostellan, Brighton
Playford, C.R. *a.* Tollington Schools, N.
Symonds, G. *sp.* Snettisham School
Gregory, F.B. *a.al.* Wirksworth Gram. S.
Pegge, W.J. *g.a.*
Catholic Coll. Institute, Manchester
Smith, J.S. *e.a.f.*
Modern S., Newcastle-on-Tyne
Woolway, H.E. *a.*
Bible Christian Coll., Shebbear
Andrews, A.A. *f.* Northgate S., Ipswich
Jackson, M.
High Pavement Hr. Elem. S., Nottingham
O'Halloran, T.
St. Aloysius' S., Hornsey Lane, N.
Callister, H.J. *e.a.* Douglas Secondary S.
Grundon, H.R. *a.f.* Hutton Gram. S.
Mason, A.F. *a.f.* Bethany H., Goudhurst
Montgomerie, W.G. Hutton Gram. S.
Hughes, H.R. *gm.* Ruthin Gram. S.
Spink, J.J.H. *e.* Wirksworth Gram. S.
Thompson, F. *e.g.*
Osborne High S., W. Hartlepool
Yates, V.B. *gm.* Gram. S., Eccles
Brewerton, E. *s.g.a.f.* Gram. S., Wilmslow
de Larrea, B.
St. Joseph's Comm. Coll., Dumfries
Morris, C.E. *g.a.* Wadham S., Liskeard
Radford, R.C. *a.* Brewood Gram. S.
Rash, A.W. *g.a.* Eye Gram. S.
Taylor, S.E. *s.h.g.a.*
Stafford Coll., Forest Hill
McKillican, R.H. *a.d.*
Hillmartin Coll., Camden Rd., N.W.
Shaw, E.N. *e.a.* Tollington Schools, N.
Stevenson, R.C. *f.d.*
Montrose Coll., Brixton Hill
Canessa, L.
Christian Brothers' Coll., Gibraltar
Dunstan, C.P. *a.* MarketBosworthGram.S.
Horwell, T.G. *e.a.*
Bible Christian Coll., Shebbear
Rowland, A.J. *g.a.*
High Pavement Hr. Elem. S., Nottingham
Constable, W.N. *e.*
Sir William Borlase's S., Marlow
Jenkin, C. Bible Christian Coll., Shebbear
Urandurraga, A. *sp.*
St. Joseph's Acad., Kennington Rd., S.E.
Bagnall, V. *d.*
Catholic Coll. Institute, Manchester
Biddick, H. *a.* St. John's Coll., Brixton
Bridge, F. *g.*
Catholic Coll. Institute, Manchester
Broad, S.J. *e.a.* West Cliff Coll., Ramsgate
Cunningham, L. Hutton Gram. S.
Gardner, L.S. Stafford Coll., Forest Hill
Phillips, P.P.
Modern S., Newcastle-on-Tyne
Shiach, J. *a.* Higher-Grade S., Carlisle
Turnbull, D.C.
Westbourne Rd. Preparatory S., Sheffield
Westcombe, E. *h.f.*
Bradbourne Coll., Sevenoaks
Barclay, W.L. *a.gm.* TollingtonSchools, N.
Barrett, S.J. Huntingdon H., Teddington
Cohen, B. *e.* Margate Jewish Coll.
Hertz, C. *a.* Montrose Coll., Brixton Hill
Hockey, J. *h.*
Bible Christian Coll., Shebbear
Johnson, C.F. *a.* Ludlow Comm. S.
Jones, G.M.
The Collegiate S., Bowes Park, N.
Laws, C.W. *a.*
Hillmartin Coll., Camden Rd., N.W.
Miller, E.A. *s.a.* MontroseColl., BrixtonHill
Moon, H. *f.*
Westbourne Rd. Preparatory S., Sheffield
Poole, H.W.
Lindisfarne Coll., Westcliff-on-Sea
Salmon, E.J. *e.* Tufnell Park Terrace S., N.
Sparks, C. *e.a.gm.* Tollington Schools, N.
Tinn, A. *d.*
High Pavement Hr. Elem. S., Nottingham
Will, E.P. *h.*
Sir William Borlase's S., Marlow
Wolfers, A. *a.al.he.* Margate Jewish Coll.
Bleach, H.J. *a.* Warwick H., Southsea
Bottomley, H.W. *e.g.* Dagmar H., Hatfield
Burrell, J.H. *a.* Bailey S., Durham
Cannon, A.C. Wadham S., Liskeard
Collard, C.O. *a.* County S., Tenby
Dawson, W.R. *d.* Wirksworth Gram. S.
Hewitt, W.C. *e.* Tollington Schools, N.
Medus, W.J.J. *a.al.*
St. Marylebone Central S., W.
Morris. H. *e.a.f.* St. Deiniol's, Upper Bangor
Perry, S. *a.* Belmore H., Cheltenham
Vilven, S.W. *e.f.* Green Park Coll., Bath
Witthaus, F.J. *gm.* Tollington Schools, N.

THIRD CLASS.
Pass Division.

²Spong, N. *ch.d.* Snettisham School
²Stokes, J.E. *ch.* Technical Day S., Walsall
²Davis, F.A. *d.* Technical Day S., Walsall
²Edwards, G.H. *f.d.*
Wreight's S., Faversham
²Walker, A.G. Epsom College
²Mussell, J.F.H.S. *d.*
Secondary Day S., Plymouth
²Spencelayh, V.C.H.
University S., Rochester
²Christopherson, W.B. *f.ch.mu.*
Hamond's Gram. S., Swaffham
²Jones, R.C. *d.* Oswestry School
²Thomson, J.B. *d.* Hanley Castle Gram. S.
²Treherne, R.C. Private tuition
²Hunkin, S.L.
Bible Christian Coll., Shebbear
²Stubbs, G.G.B. Tollington Schools, N.
²Wheeler, C.L. *d.*
Kent House Coll., Anerley
²Tackley, E.J. Tollington Schools, N.
²Schumann, B.S. Tollington Schools, N.
²Ward, H.V.
Mundella Higher Elem. S., Nottingham
²Foyle, R. Taunton'sTradeS., Southampton
²Lidstone, A. *d.* Tollington Schools, N.
²White, E.V.
Kingswood S., Lansdown, Bath
²Hill, A. Higher-Grade S., Carlisle
²Comissiong, W.C. Private tuition
²Hodgson, C.F. Tollington Schools, N.
²Philpot, A.H. Taunton School
²Presland, F.R. Tollington Schools, N.
²Walker, M. *bk.ch.* Brewood Gram. S.
²Baldwin, H. *d.* Private tuition
²Daly, F.J. *d.*
St. Joseph's Comm. Coll., Dumfries
²Allen, R.G. University S., Rochester
²Biro, F.J. *d.*
St. Joseph's Comm. Coll., Dumfries
²Hall, E.W. Rolandseck S., Ealing
²Harding, E. S. *d.*
Taunton's Trade S., Southampton
²Moody, G. Bethany H., Goudhurst
²Fisher, B.W. *d.*
Mundella Higher Elem. S., Nottingham
²Barlow, T.M. Gram. S., Eccles
Pettit, A.R. *ma.d.*
Battersea Polytechnic Science S., S.W.
²Herbert, R.
Sir Walter St. John's S., Battersea
²Leigh, H.V. Sherborne School
²Trotman, E.H.
Taunton's Trade S., Southampton
²Young, W.H. Grove H., Highgate
²Crowfoot, A.R. Private tuition
²Pickard, W.H. Tollington Schools, N.
²Howl, J.S. *d.* Technical Day S., Walsall
²Penney, W.R.
Bible Christian Coll., Shebbear
²Pickrell, H.B.
Sir Walter St. John's S., Battersea
²Ashcroft, H. Hutton Gram. S.
²Bawden, C.A. Tollington Schools, N.
²Butler, E.C.S. Brewood Gram. S.
²Peak, C.A. Hutton Gram. S.
²Rayner, A. Tollington Schools, N.
²Glendinning, A. *d.*
St. Joseph's Comm. Coll., Dumfries
²Pilliner, A.P.H. Gram. S., Ealing
²Bobby, B. Boys' High S., Iron Bridge
²Moreau, F. *f.* Bethany H., Goudhurst
²Somerset, V.E. Private tuition
²Stamp, C.A. Bethany H., Goudhurst
²Williams, R.W. County S., Dolgelley
²Bagshaw, W. Brewood Gram. S.
²Bryan, C.J.
Catholic Coll. Institute, Manchester
²Foster, W. Bethany H., Goudhurst
²Harris, C.K. Wreight's S., Faversham
²Long, H.W. St. George's Coll., Weybridge
²McIver, A.E. *d.*
Mundella Higher Elem. S., Nottingham
²McMonnies, N. Tollington Schools, N.
²Penfold, W.R.
Sir Walter St. John's S., Battersea
²Calnan, W. *d.*
St. Joseph's Comm. Coll., Dumfries
²Mullally, F. Private tuition
²Williamson, V.B. Gram. S., Eccles
²Hopewell, V.E.
Mundella Higher Elem. S., Nottingham
²Millot, J.J. Montrose Coll., Brixton Hill
²Savage, L.N. Bethany H., Goudhurst
²Wainwright, G.H. Eye Gram. S.
²Webster, H.P. *d.*
Osborne High S., W. Hartlepool
²Adey, F.C. Richmond Hill School
²Bonning, S.L. Taunton School
²Shepherd, G.W. *d.* Tollington Schools, N.
²Ballard, R.W.
Dunheved Coll., Launceston
²Carlile, H.C.S.
Polytechnic Day S., Regent St., W.
²Dunkley, C. Brewood Gram. S.
²Fitch, K. *d.*
St. Paul's S., West Kensington
²Maunder, G.C. Tavistock Gram. S.
²Wimbush, J.B. *d.*
Brunt's Technical S., Mansfield
²Wonnacott, J.P
Dunheved Coll., Launceston
²Eastick, F. Salway Coll., Leytonstone
²Sherman, H. Comm. S., Ripley
²Crews, H.E. *d.* St. James's S., Keyham
²Glover Clark, S. Bethany H., Goudhurst
²Foster, H. Ludlow Comm. S.
²Needham, T.H. *d.* Gram. S., Ealing
²Page, A. *d.*
Mundella Higher Elem. S., Nottingham
²Hall, R. Snettisham School
²Holman, W. BibleChristianColl., Shebbear
²Drayton, P.W.P. Private tuition
²Hickey, S.G.M. St. Mark's Coll., Windsor
²Johnson, J.H.
143 Ashburnham Rd., Hastings
²Johnstone, M. Higher-Grade S., Carlisle
²Lloyd, M.J.M. Tollington Schools, N.
²Smith, H.H. High S. for Boys, Worthing
²Alderdice, A.E. *d.* Gram. S., Ealing
²Davies, H.A. Private tuition
²Lord, G. Bethany H., Goudhurst
²Mills, W.J. Tollington Schools, N.
²Wright, S.A. *d.* Brighton Gram. S.
²Alston, H.G. Bethany H., Goudhurst
²Newman, A.B *d.* Market BosworthGram.S.
²Parker, A.T.H. *d.* Brighton Gram. S.
²Waller, H.T. Thorne Gram. S.
²Gray, R.H. *d.*
Sir Andrew Judd's Comm. S., Tonbridge
²Griffith, G. *d.*
Taunton's Trade S., Southampton
²Morrison, E.C.S. Bethany H., Goudhurst
²Peachey, H.S. Kent House Coll., Anerley
²Sanders, M. *d.* Technical Day S., Walsall
²Alwen, P. Belvedere, Hayward's Heath
²Banning, A.E.
Richmond H., Tunbridge Wells
²Fawcett, J.G. *d.*
St. George's Coll., Weybridge
²McCormack, J. *f.*
St. Joseph's Comm. Coll., Dumfries
²Osborne, G.P. *d.*
Westbourne High S., Paddington, W.
²Roskilly, W.W. *ch.* Tavistock Gram. S.
²Black, S. Osborne High S., W. Hartlepool
²Leman, W.E.
Lindisfarne Coll., Westcliff-on-Sea
²Mealand, H.G. Comm. S., Ripley
²Parfitt, E.R.G. Tollington Schools, N.
²Remington, H.R.
Lindisfarne Coll., Westcliff-on-Sea
²Bell, H. Higher-Grade S., Carlisle
²Daymond, H.A.V.E. *d.* Private tuition
²Joy, J. Bethany H., Goudhurst
²Pomeroy, J.M. Private tuition
²Saunders, H.
Bible Christian Coll., Shebbear
²Couldery, W.W. *s.* Rye Gram. S.
²Davies, O.P. Private tuition
²Smith, H. Belvedere, Hayward's Heath
²Wade, A.M.L. Private tuition
²Crook, S. *d.* St. George's S., Worthing
²Harrison, J.E.
Arnold H., South Shore, Blackpool
²Harvey, H. Bethany H., Goudhurst
²Mathison, W. Royal Coll., South Shields
²Parsons, R.
St. Joseph's Comm. Coll., Dumfries
²Saunders, F.P. Epsom College
²Tregillus, A.L. Taunton School
²Crosse, C.M. *f.* Warwick H., Southsea
²Darby, A.M. Taunton School
²Fonceca, N.C. Epsom College
²Sloggett, A.L. *d.* St. James's S., Keyham
²Soulby, E. Ruthin Gram. S.
²Weston, J.R. Belvedere, Hayward'sHeath
²Wilkinson, C.A. Tollington Schools, N.
Clarke, H. *g.a.d.*
Central Classes, Long Sutton
²Crook, F.A. *d.*
King Edward VI. Gram. S., Southampton
Eyton-Jones, W.E. *e.*
HarboroughGram.S., MarketHarborough
Ingman, A. *gm.* Ruthin Gram S.
Gear, H.R. *a.* Stafford Coll., Forest Hill
Grimley, S.P. *a.* Market BosworthGram.S.

BOYS, 3RD CLASS, PASS—*Continued.*

Hayes, J.L. *g.*
St. Joseph's Comm. Coll., Dumfries
Jacobs, C. *e.f.* Argyle H., Sunderland
Landau, G. *s.e.h.a.*
West Cliff Coll., Ramsgate
Moon, J.P. *g.* The Coll., Weston-super-Mare
Robinson, C H *a.d.*
High Pavement Hr. Elem. S., Nottingham
Sowton, R.C. Tavistock Gram. S.
Stephens, F.J.S. *a.d.*
Sir Andrew Judd's S., Tonbridge

Dayton, W.R. *a.*
Clark's Coll. S. for Boys, Holloway Rd., N.
Eldret, A.B. *g.* Dagmar H., Hatfield
Fisher, A.J. Bethany H., Goudhurst
Guguenheim, F.A.F. *e.a.*
Oxford H., Junction Rd., N.
[2]Haynes, A.E.N. *d.*
Sir Walter St. John's S., Battersea
Henry, W.T. *e.* Higher-Grade S., Carlisle
[2]Lambert, A.S. Grove H., Highgate
Marshall, D. Gram. S., Eccles
Milner, H.W. Hutton Gram. S.
Oldaker, G. Maldon Gram. S.
Roberts, J.T. Gram. & Coll. S., Carnarvon
[2]Stewart, J. St. Mary's Hall S., Cardiff
Venables, J.E. Ludlow Comm. S.
Wright, H.C. Comm. S., Ripley

Browning, E.G. *s.*
Lindisfarne Coll., Westcliff-on-Sea
Dubuis, P.L. *g.a.f.* Manor H., Havant
[2]Dunstan, E.G. Park S., Wood Green, N.
Gilbert, E. *e.g.* Holt H., Cheshunt
Gould, H.R. *a.al.* Tollington Schools, N.
[2]Gubbins, E.H. *d.* Wright sS., Faversham
Guy, E.F. *s.* Tutorial S., Penarth
[2]Kirk, C. *d.*
Mundella Higher Elem. S., Nottingham
[2]Konigbagbe, O.
African Training Inst., Colwyn Bay
Laine, L.H. *a. gm.* Tollington Schools, N.
Lobb, N. *e.a.* Wadham S., Liskeard
[2]Palmer, F.C.
Richmond H., Tunbridge Wells
[2]Ragg, F.S. Market Bosworth Gram. S.
Richardson, G.D. Hutton Gram. S.
Slack, J.N. Bailey S., Durham
[2]Sollitt, W. Manor S., York
Tice, L.C. *e.g.d.*
Oxford H., Junction Rd., N.
Torrens, J. *e.a.*
Main Street Schools, Bangor
Turner, J.J. Derwent H., Bamford
[2]Wilkins, T. Hutton Gram. S.
Young, S.J. *d.*
Taunton's Trade S., Southampton

[2]Anderson, S. Bethany H., Goudhurst
[2]Ballard, O.A.
Mercers' School, Holborn, E.C.
Bennett, C.J.F. *f.* 57 Lansdowne St., Hove
[2]Bentley, R.V. Gram. S., Eccles
[2]Booth, W.R. Thornton Gram. S., Bradford
Brown, C. *g. a.*
Catholic Coll. Institute, Manchester
Burton, C.S. Tollington Schools, N.
Cavaghan, T.B. Higher-Grade S., Carlisle
[2]Chalk, J.P. Hove Coll., Hove
[2]de Verteuil, M.
Stonyhurst Coll., nr. Blackburn
[2]Evenden, H.P.
The Modern S., E. Grinstead
Goenechea, P.
St. Joseph's Comm. Coll., Dumfries
[2]McCarthy, H.Y. *f.* Private tuition
[2]McLauchlan, M.S.
King Edward VI. Gram. S., Southampton
Milne, N. Tutorial S., Penarth
Raimback, D.W. *e.*
Harlesden College, N.W.
Reason, T.G. Ludlow Comm. S.
[2]Watt, T.G. Bethany H., Goudhurst
[2]Williams, E.R. Tutorial S., Penarth
[2]Wood, W.P. Belvedere, Hayward's Heath

Bacarese, L.L. *e.*
Christian Brothers' Coll., Gibraltar
Boyd, H. van S. Tollington Schools, N.
Cattell, J.W. Tollington Schools, N.
[2]Collis, C.A. Private tuition
Davidson, J.G. *ge.*
Lancaster Coll., W. Norwood
[2]Davies, E.H. Tettenhall College
Dickson, D.H.
Sir William Borlase's S., Marlow
[2]Dillon, R.L.A.
38 Tavistock Place, Plymouth
[2]Gillie, G.T.
Skerry's Coll., Newcastle-on-Tyne
Griffiths, R. *e.a.* County S., Tenby
[2]Hart, S. Private tuition
[2]Lee, S.C.B. Lord Williams's S., Thame
MacKintosh, E.A. *e.f.* Rostellan, Brighton
Sheldon, H.C. *l.* Ruthin Gram. S.
Southworth *f.* Hutton Gram. S.
Tompsett, A. *a.* Burgess Hill High S.
[2]Watters, A. *d.*
St. Joseph's Comm. Coll., Dumfries

Benison, N.S.
Hillmartin Coll., Camden Rd., N.W.
Bowmer, W.H. *g.* Wirksworth Gram. S.
[2]Brown, A.E.
African Training Inst., Colwyn Bay
[2]Curtis, W.C. Park S., Wood Green, N.
[2]Flower, F.H. Eye Gram. S.
Furbank, A.E.W. *e.*
St. Catherine's Coll., Richmond
Gooding, C. Northgate S., Ipswich
[2]Hardy, L. Taunton School
Hodge, C.R. *a.*
Sir Andrew Judd's S., Tonbridge
[2]Lockington, H.A. Private tuition
McMahon, A.
Catholic Coll. Institute, Manchester
[2]Richardson, H. Taunton School
Robinson, J.H. Tollington Schools, N.

Aveling, L. Snettisham School
[2]Boeck, E. Tollington Schools, N.
[2]Branthwaite, J.S. Gram. S., Eccles
Buckley, W.E. *a.* Rhyl County S.
[2]Comeau, P. Private tuition
[2]Cometson, A.
St. Joseph's Comm. Coll., Dumfries
[2]Donovan, M. St. Catharine's S., Broxbourne
[2]Eedes, R. Bethany H., Goudhurst
[2]Forrest, T.H.N. Private tuition
Fox, R. *e.* Rye Gram. S.
[2]Gordon-Williams, P.
Hampton Gram. S., Glasbury-on-Wye
[2]Hill, J.R.
Hillmartin Coll., Camden Rd., N.W.
[2]Kelly, E.B.R.
St. Joseph's Comm. Coll., Dumfries
Lasry, M. *a.f.* Townley Castle S., Ramsgate
Mir, P. St. Joseph's Comm. Coll., Dumfries
Nash, W. *f.* Cleave's Endowed S., Yalding
Newman, H.E.C. Ludlow Comm. S.
Pepper, H.W. *e.a.* Northgate S., Ipswich
Philcox, P. *f.* St. John's Coll., Brixton
[2]Rudd, S. Culham Coll. S., Abingdon
Sellick, H.D. Tavistock Gram. S.
[2]Sprenger, H. Brewood Gram. S.
[2]Walker, G.R. The Douglas S., Cheltenham
[2]Ward, C.V.
Eastward Ho! Coll., Felixstowe
Wheldon, T. Tollington Schools, N.
Whitham, J.S. *e.*
Conv. of Mercy, Clifford, Boston Spa

[2]Alexander, U. Battle Hill S., Hexham
Barton, J. Higher-Grade S., Carlisle
Colmer, C.A. *a.* Wadham S., Liskeard
Durrans, A. *f.* Ruthin Gram. S.
[2]Evans, J.H.
Kingswood S., Lansdown, Bath
Gatis, J. *e.f.* St. George's Coll., Weybridge
McPherson, W. Manor S., York
Moore, R.B. *a.*
Bible Christian Coll., Shebbear
Morgan, F. *e.* Main Street Schools, Bangor
Roberts, C.E. *a.* Oswestry School
Robertson, D. *g.f.* Snettisham School
[2]Rushton, N. Hutton Gram. S.
Starrs, P.D. *a.d.*
St. Joseph's Comm. Coll., Dumfries
Wilkinson, F.S. *a.* Argyle H., Sunderland
Zuntz, G.L. *ge.* Private tuition

Bishop, A. The Coll., Weston-super-Mare
[2]Brown, A. *d.*
Rutherford Coll., Newcastle-on-Tyne
Brown, R.C. Tollington Schools, N.
Byard, C. *e.f.* Belmore H., Cheltenham
[2]Clement, C.H. Epsom College
Dean, W.R.M. *d.* Gram. S., Eccles
Hadrill, R.A. *e.* Tollington Schools, N.
Hill, C. *g.*
Sir James Smyth's Gram. S., Camelford
Irvine, F.A. Huntingdon H., Teddington
King, A.D.W. *d.*
Hillmartin Coll., Camden Rd., N.W.
[2]Lake, R.G.J. Private tuition
[2]Mander, A.O. Wadham S., Liskeard
[2]Milne, A.J.J.
Battersea Polytechnic Science S., S.W.
Pickering, S.
The Collegiate S., Bowes Park, N.
Reading, J.W.J. *l.*
Sir William Borlase's S., Marlow
Relph, P. *f.* Montrose Coll., Brixton Hill
Sanders, W.H.D. *f.* Hove Coll., Hove
[2]Vogel, H.C.
St. Leonards Coll. S., St. Leonards-on-Sea
[2]Whittington, W.H. *sh.* Gram. S., Ealing

Bath, J.E.W. *e.*
Sir William Borlase's S., Marlow
Cherry, G.H. *d.* Gram. S., Eccles
[2]Clarke, A.B.
Bible Christian Coll., Shebbear
[2]Dunbar, J.H. Oswestry School
Fitzwilliam, G.E. Tollington Schools, N.
Flower, A.C. *a.f.* Richmond Hill S.
[2]Gadd, H. The Modern S., E. Grinstead
[2]Gilbert, A.N. *d.*
Mundella Higher Elem. S., Nottingham
[2]Hogan, H. 38 Tavistock Place, Plymouth
Kiernander, E. *e.g.*
St. Aloysius' S., Hornsey Lane, N.
Mason, B.I. The Modern S., Oswestry
[2]Matthews, R.S.
St. Deiniol's, Upper Bangor
[2]Newsome, H.H.
Arnold H., South Shore, Blackpool
Pullin, J.E. *a.* Stafford Coll., Forest Hill
Robin, M.E. *a.f.* Comm. S., Ripley
[2]Savary, T.A. Snettisham School
Shorney, C.J. *a.* Uckfield Gram. S.
Still, W. Bethany H., Goudhurst
Taylor, F.H. *f.* Wirksworth Gram. S.
[2]Travis, W. Private tuition
Vosper, C.S. *sc.*
Bible Christian Coll., Shebbear
Watson, S.C.C. *e.a.al.f.*
Modern S., Newcastle-on-Tyne
Whitty, R.F.X. *f.*
St. George's Coll., Weybridge

[2]Bell, W. Brewood Gram. S.
Bensted, A.G. *h.*
Oxford H., Junction Rd., N.
[2]Channon, P.J. Belvedere, Hayward's Heath
Dishman, L. *a.* Thorne Gram. S.
Dykins, W.A. *f.* Ruthin Gram. S.
Fish, H. *a.* Tollington Schools, N.
Foster, H.R.
Sir William Borlase's S., Marlow
[2]Harris, P.A. Horsmonden School
[2]Haworth, A. Hutton Gram. S.
Jones, G.S. Ruthin Gram. S.
[2]Kerr, M.C. Gram. S., Belper
Knight, G.J. *a.* Uckfield Gram. S.
[2]Lacey, K.C.W.
S. for Sons of Officers, Herbert Rd., Woolw'h
Partridge, L.H. *a.*
Stafford Coll., Forest Hill
Smith, J.R. Higher-Grade S., Carlisle
[2]Stears, H.L. Silesia Coll., Barnet
Tyler, G. St. Catharine's S., Broxbourne
Wakelin, D.A.
Eastward Ho! Coll., Felixstowe
[2]Williams, C.B. Oswestry School

[2]Bird, S.H. Private tuition
Brown, H.G.C.
Lindisfarne Coll., Westcliff-on-Sea
Brown, W.F. *a.* Maldon Gram. S.
Cartwright, E. *f.*
Cleave's Endowed S., Yalding
Darnond, G.
St. Joseph's Coll., Beulah Hill, S.E.
Flanagan, R.S. *h.* Gram. S., Eccles
[2]Gibson Fleming, H. Sherborne S.
[2]Goodley, A.E.
Culham College S., Abingdon
Goodman, F.L.
Lindisfarne Coll., Westcliff-on-Sea
[2]Hall, H.P. Ruthin Gram. S.
Hayley, P. University S., Southport
Lambert, A. *a.*
St. Joseph's Coll., Beulah Hill, S.E.
Lester, G.E. *a.d.* Thorne Gram. S.
Lunnon, R.
Sir William Borlase's S., Marlow
[2]McQuillin, L. St. Catherine's S., Sheffield
Moore, A.G. Tavistock Gram S.
Nixon, E. Modern S., Newcastle-on-Tyne
Peacock, J.F. *e.f.* Argyle H., Sunderland
Penn, E.A. Montrose Coll., Brixton Hill
Pilkington, J. Hutton Gram. S.
Rice, T.H. Tavistock Gram. S.
Roberts, B.V. Ruthin Gram. S.
Rouilly, R.P. *a.f.*
St. George's Coll., Weybridge
[2]Sayer, H.E. Beverley S., Barnes
Stephenson, J.W. Battle Hill S., Hexham
Watson, D. Dudley H., Lee, S.E.

[2]Colman, P. *a.* Taunton School
Cooke, L. Tutorial S., Penarth
Craney, F.E. *a.* Tollington Schools, N.
Dagnino, A. *e.*
Christian Brothers' Coll., Gibraltar
[2]De Meza, B. Tollington Schools, N.
Duffus, C.McL. Gram. S., Ealing
Gibbons, F.L. *e.g.a.* Northgate S., Ipswich
Gore, F.H. *a.* Douglas Secondary S.
Horsfall, B.A. *e.a.*
Sir William Borlase's S., Marlow
[2]Jones, D.T. Gram. S., Newquay, Cardigan
Jones, W. Wadham S., Liskeard
Seabrook, S.B. *gm.* Maldon Gram. S.
Smith, S. *g.* Minster Gram. S., Southwell
Trevena, W.N.
Penwerris Gram. S., Falmouth
Truby, H.J. *a.* Belmore H., Cheltenham

[2]Butterfield, A. Private tuition
[2]Canton, H. Private tuition
Clarke, A. *d.* St. Boniface's Coll., Plymouth
[2]Coggans, W.
Stonyhurst Coll., nr. Blackburn
[2]Cook, R.L. Private tuition
Cooke, W.T. *g.* Rye Gram S.
[2]Crick, C.E. Maldon Gram. S.
[2]Girling, I.J.
Eastward Ho! Coll., Felixstowe
Hall, C.H. *e.* Culham College S., Abingdon
Herd, G. *a.* Brewood Gram. S.
Hinchliff, S.B. *a* Thorne Gram. S.
Knevett, E.S. *a* Eye Gram. S.
Percival, J.F. *a* Tollington Schools, N.
Rice, C.H. *a.* Eye Gram. S.
Roberts, R.P. *a.* Ludlow Comm. S.
Savage, S. Uckfield Gram. S.
[2]Waters, J.F.B. Horsmonden School
Watson, J.W. *g.a.*
High Pavement Hr. Elem. S., Nottingham
[2]Woollard, R.W. Comm. S. Ripley

Balding, C. *e.* Harlesden College, N.W.
Brewer, H. *a.* Tollington Schools, N.
Crabb, H.A.E. Montrose Coll., Brixton Hill
Davies, A. *a.* County School, Tenby
Herd, P. *a.* Brewood Gram. S.
[2]Hill, J.E.B. Taunton School
[2]King, R.E. Gram. S., Chichester
[2]Linnett, L.D. Montrose Coll., Brixton Hill
Maney, L. Oxford H., Junction Rd., N.
Mole, P.R. *a.* Manor S., York
Montegriffo, C.
Christian Brothers' Coll., Gibraltar
[2]Nicholas, A.V.
Victoria Tut. Coll., Buckingham Palace Rd.
Piggott, F.C. Wirksworth Gram. S.
[2]Roffey, H.D. Kersal S., Manchester
[2]Saunders, A.B.
Fernie College, Highgate, N.
Saunderson, C.W. *g.* Dagmar H., Hatfield
[2]Sewell, W.
Victoria Tut. Coll., Buckingham Palace Rd.
Shanks, E.B. *e.* Holt H., Cheshunt
[2]Smith, J. Gram. S., Eccles
Tullis, A.J. Stafford Coll., Forest Hill
Usher, H.B. *e.*
Westcliff S., Norbreck, nr. Blackpool
[2]Vickerstaff, N.C. Private tuition
White, H. Brent Hill S., Hanwell
Wright, M. Private tuition
Yearp, C. *a.* Belmore H., Cheltenham

Carne, H. *a.*
Bible Christian Coll., Shebbear
Cory, C.H. Secondary Day S., Plymouth
Eades, R.H. *a,*
Harborough Gram. S., Market Harborough
Edkins, C.W.R.
Formby & Freshfield High S.
Foyle, M. *d.*
Taunton's Trade S., Southampton
[2]Herbert, N.T.
Sir Walter St. John's S., Battersea
Hewson, F.B.
The Coll., Weston-super-Mare
[2]Kirby, J.T.H. Hythe School
Livermore, E.B. *g.a.*
Lindisfarne Coll., Westcliff-on-Sea
Magee, J. *a.*
St. Joseph's Comm. Coll., Dumfries
Mullin, J.P.J.
Intermediate S. for Boys, Cardiff
[2]Sedgwick, L.P.
Belvedere, Hayward's Heath
[2]Singleton, H.
Longwood Gram. S., Huddersfield
Watters, T.
St. Joseph's Comm. Coll., Dumfries
Wickett, T.
Sir James Smyth's Gram. S., Camelford

[2]Andrew, W. Southport Coll., Southport
Barnfield, A. *a.* Belmore H., Cheltenham
Betts, W.G. Gram. S., Ealing
Chivers, W.J.G.
Culham College S., Abingdon
Cochrane, J. *g.a.*
Main Street Schools, Bangor
[2]Connelly, J.J.
St. Joseph's Comm. Coll., Dumfries
Coyle, T. St. Joseph's Coll., Beulah Hill, S.E.
Crampton, J.C. *d.* Aylwin Coll., Arnside
Dicksion, C. Brewood Gram. S.
[2]Digby, H.E. Private tuition
[2]Dyson, W.E. Rastrick Gram. S.
[2]Foggitt, T.T. University S., Southport
Gallop, C. Tollington Schools, N.
Gillillan, J.M. Tollington Schools, N.
[2]Girling, A.R. Private tuition
[2]Gray, W.M. Private tuition
Hitchens, A.P.
Oxford Coll., Waterloo, L'pool
Holderness, H.B. *a.d.*
Central Classes, Long Sutton
Hunt, W.
Catholic Coll. Institute, Manchester
Knapp, N.H. Bible Christian Coll., Shebbear
Lunnon, L.G.
Sir William Borlase's S., Marlow
Pickthall, W.L. *e.* Harlesden College, N.W.
[2]Quin, C.F. Private tuition
[2]Russell, S.J. Bethany H., Goudhurst
Smyth, J.B. Grove H., Highgate
[2]Watkinson, E.G.
Fartown Gram. S., Huddersfield

Bourn, T. *e.* Bailey S., Durham
Brodrick, R.G.H.
Belle Vue House, Greenwich
Burgess, A.H. *e.a.* Tudor Hall, Hawkhurst
Clapp, J.F.W. Mount Radford S., Exeter
Currie, R.B.
St. Joseph's Comm. Coll., Dumfries
Davies, J. Ruthin Gram. S.
de Raimbouville, B.M. *f.*
St. George's Coll., Weybridge
[2]Farquharson, H.
St. Catharine's S., Broxbourne
[2]Ginger, L.S.
Brondesbury Coll., Willesden Lane, N.W.
Gorringe, S.B. Burgess Hill High S.
[2]Harris, J.G. Private tuition
[2]Hassall, D.C.J. St.V. Private tuition
Haydon, A. Bible Christian Coll., Shebbear
[2]Hayhurst, W. Narcroft H., Penrith
Landau, B. *s.a.*
Townley Castle S., Ramsgate
Large, L.G. Tudor Hall, Hawkhurst
Loughrey, R.S. *a.*
St. Catharine's S., Broxbourne
[2]Muros, G.H. Tettenhall College

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BOYS, 3RD CLASS, PASS—*Continued.*

Paget, C.N. St. George's Coll., Weybridge
Procter, C.E. Lindisfarne Coll., Westcliff-on-Sea
Renshaw, C. Snettisham School
²Scrivener, K. Central Foundation S., Cowper St., E.C.
²Smith, R.J. Thornton Gram. S., Bradford
Stone, W.J. *a.* Culham College S., Abingdon
Taylor, F.L. Ludlow Comm. S.
²Tompsett, G.H. Horsmonden School
²Watson-Will, C.S. Montrose Coll., Brixton Hill
Woodcock, V.H. *a.* Parkhurst Coll., Blackpool
²Wyatt, H.S.J. Cambridge H., Bath

Bell, C.W. *f.* University S., Southport
Callaway, F.LeM. Tollington Schools, N.
Clayton, J. *a.* St. Catharine's S., Broxbourne
²Denny, S.E. Northgate S., Ipswich
Eastman, H. *a.* Sir Andrew Judd's S., Tonbridge
Graham, A.W. Hutton Gram. S.
Gregg, R.S. *a.* Thorne Gram. S.
Harrison, H.W. *e.* Bethany H., Goudhurst
²Holmes, W. Private tuition
Jamison, D. Private tuition
²Lewis, F.H. Oswestry School
²Livesey, C.R. Grimshaw Street British S., Preston
Richards, L.P. Bible Christian Coll., Shebbear
Richardson, C. Private tuition
Spencer, W. *a.* High Pavement Hr. Elem. S., Nottingham
Spencer-Payne, H.E. West Cliff Coll., Ramsgate
Thomson, H.C. Tollington Schools, N.
²Turner, W.H. *a.* Private tuition

Addie, J.P. Osborne High S., W. Hartlepool
Barnett, V. Margate Jewish Coll.
Barrett, J.W. *a.* St. George's Coll., Weybridge
Cargill, G. Hanley Castle Gram. S.
Carter, L. *a.* Warwick H., Southsea
Christmas, R.A. Stafford Coll., Forest Hill
Clark, T.W. Osborne High S., W. Hartlepool
Clogg, A. Wadham S., Liskeard
Copplestone, T.S. Bible Christian Coll., Shebbear
Dallas, J. *a.* Hutton Gram. S.
²Gibbs, J. Hanley Castle Gram. S.
²Hall, F.J. Old Elvet S., Durham
Halstead, W. *g.* Higher-Grade S., Carlisle
²Hay, J.W. Private tuition
Humber, J.S. *f.* University S., Southport
Johnston, H.K. Bethany H., Goudhurst
Knight, F.A. Grove H., Highgate
²Lichtenstein, L. Cheetham Coll. S., Manchester
²Mariette, F. Montrose H., Plymouth
Mills, C.R. Ruthin Gram. S.
²Munt, J.B. Private tuition
²Orpin, A. The Grammar S., E. Finchley
Podmore, F. *a.* Thorne Gram. S.
Rogerson, W.A. *g.f.* Hutton Gram. S.
Shillitoe, R.J. Private tuition
²Wilson, W.F. Leigh Hall Coll., Leigh-on-Sea
²Woollatt, R.B.G. Private tuition

²Anderson, J.H.P. Oswestry School
²Barnard, E.W. Bethany H., Goudhurst
Bevin, F. *e.* St. Francis de Sale's S., Walton, L'pool
Butler, W. *e.g.* Salesian S., Battersea, S.W.
²Climpson, W.E. Hyde H., Eastbourne
²Crozier, H.B. Private tuition
Darvill, C.M. Bethany H., Goudhurst
Davies, J.C. Rhyl County S.
Davies, R. County S., Tenby
Edwards, H.A. *s.* The Modern S., Oswestry
²Fielding, H.S. Brondesbury Coll., Willesden Lane, N.W.
Fox, J. Market Bosworth Gram. S.
Goldie, C.H. Lancaster Coll., W. Norwood
Gruby, D.McL. Tudor Hall, Hawkhurst
Guttentag, W.E. Highfield S., Wandsworth Common, S.W.
²Hart, G. Horsmonden School
Hodgson, M.C.L. *a.* Aylwin Coll., Arnside
Kelsey, S.W. *a.* Sir Andrew Judd's Comm. S., Tonbridge
²Lathbury, C.L. Highfield S., Chertsey
Lester, A. *a.* St. Aloysius' S., Hornsey Lane, N.
²Littlejohn, T.G. Woodford Coll., S. Woodford
Mitchell, F. Tudor Hall, Hawkhurst
Morgan, G. *a.* Thorne Gram. S.
²Pape, A.G. *d.* Rivington and Blackrod Gram. S.
Payne, W.R. Highfield S., Wandsworth Common, S.W.
²Perkins, R.R.E. Private tuition
²Powell, V. University Classes, Paradise St., L'pool
Reader, W.R. *a.* Sir Andrew Judd's Comm. S., Tonbridge
²Sanderson, H. Monk Bridge S., York
Somerville, G.C. Stafford Coll., Forest Hill
²Swallow, S.E. *d.* Mundella Higher Elem. S., Nottingham
²Temple, R. West Cliff Coll., Ramsgate
²Thomlinson, N. Gram. S., Eccles
Turner, H.W. *a.* Holt H., Cheshunt
²Turner, P.N. Private tuition
Walker, R.J. Culham College S., Abingdon
²Yager, J.G.W. Private tuition

Allen, H.B. County S., Tenby
Astle, E. *f.* Rostellan, Brighton
Cousin, J.D. Aylwin Coll., Arnside
Dalziel, G. Osborne High S., W. Hartlepool
²Davis, H. Modern S., Newcastle-on-Tyne
Dixon, J. *a.* Higher-Grade S., Carlisle
Felton, C.F. Tudor Hall, Hawkhurst
²Griffiths, D.A. Epsom College
Hodge, A.B. 38 Tavistock Place, Plymouth
Ingersoll, C.T. Gram. S., Ealing
²Little, H.L. Boys' High S., Erdington
May, F.S.E. Montrose Coll., Brixton Hill
Maynard, A.G. *a.* Sir Andrew Judd's S., Tonbridge
McKend, B. *a.* Higher-Grade S., Carlisle
McLachlan, N. *a.* St. Joseph's Comm. Coll., Dumfries
Mullan, F.W. *d.* Lydney Secondary S.
Pearson, L.H. *a.* Market Bosworth Gram. S.
Snaylam, J.W. Hutton Gram. S.
Stockbridge, C.K. *f.* Sir Andrew Judd's S., Tonbridge
Waterworth, C. *f.* 2 Chapel Place, Runcorn
²Wheeler, M.T. University S., Southport
Whittaker, J.R. Oswestry School
Willoughby, E.C. Kent House Coll., Anerley
Windus, C.E. St. John's Coll., Brixton

Berry, J. *f.* Hutton Gram. S.
Berryman, E. *a.* Brewood Gram. S.
Bowes, A.A. Gram. S., Eccles
Creek, W.I. *d.* Bible Christian Coll., Shebbear
Green, F.H. Private tuition
Hay, A. West Cliff Coll., Ramsgate
Hobrough, G.R. Eastward Ho! Coll., Felixstowe
²Hoenig, J. St. Joseph's Acad., Kennington Rd., S.E.
Huddy, G.B. Wadham S., Liskeard
Idiens, F.A. *s.* Hanley Castle Gram. S.
Macdonald, F.C. Private tuition
Marks, F.M. High S., Camborne
Molyneux, R. Formby & Freshfield High S.
²Porter, C.F. Leigh Hall Coll., Leigh-on-Sea
Rossiter, B. St. George's Coll., Weybridge
Spalding, H. St. Joseph's Coll., Beulah Hill, S.E.
Thompson, F.W. Market Bosworth Gram. S.
Woodin, A.J. Bible Christian Coll., Shebbear

Biggs, J.H.C. Holt H. Cheshunt
Bruin, A.W. Richmond Hill School
Cane, T.P. *g.* The Coll., Tankerton-on-Sea
Cox, C.M. Culham College S., Abingdon
Duffy, J.V. *e.* St. Joseph's Comm. Coll., Dumfries
²Fabian, C.E. Tollington Schools, N.
²Garnett, J.E. Culham College S., Abingdon
Harris, W.H. *s.* Eye Gram. S.
Klupfel, G. *g.* St. Aloysius' S., Hornsey Lane, N.
Mack, V.W. Taunton Trade S., Southampton
²Miller, H. St. Catharine's S., Broxbourne
Mortimer, R.T. Westbourne High S., Paddington, W.
Nalder, W. *a.* Snettisham School
²Neale, S.J. The Rosary, Whitchurch, Hants
O'Leary, J. St. Joseph's Acad., Kennington Rd., S.E.
Parsons, W. *a.* St. Joseph's Comm. Coll., Dumfries
Pashley, W.E. Thorne Gram. S.
Paul, A.W. Weston H., Eastbourne
Penson, J. *f.* Belmore H., Cheltenham
²Quin, J.H. St. George's Coll., Weybridge
Sturt, L. Montrose Coll., Brixton Hill
Vokes, C.G. Bitterne H., Bitterne, nr. Southampton
Wilkinson, M. Minster Gram. S., Southwell
Wilson, J. University S., Southport
Young, L.H. Bethany H., Goudhurst

Barrass, G.D. *a.* Thorne Gram. S.
Betts, A.W. High Pavement Hr. Elem. S., Nottingham
Biscoe, C.H. *e.* Sir William Borlase's S., Marlow
Coppinger, T.C. Stafford Coll., Forest Hill
Eales, W.J. Lindisfarne Coll., Westcliff-on-Sea
Evans, R.A. Bible Christian Coll., Shebbear
Glanville, W. County S., Tenby
Gledhill, R. *a.* University S., Southport
Heald, H. *f.* Hutton Gram. S.
²Healy, R.F. Private tuition
Holgado, J. Christian Brothers' Coll., Gibraltar
Idiens, F. Brewood Gram. S.
Inglis, E.F. Sir Andrew Judd's Comm. S., Tonbridge
Irving, J.H.A. Tollington Schools, N.
Lawrence, R.C. Holt H., Cheshunt
Luna, V. Catholic Coll. S., Lytham
Malpas, C.C. Private tuition
²McCarroll, A. St. Joseph's Comm. Coll., Dumfries
McCormack, S. *a.* St. Joseph's Comm. Coll., Dumfries
Nicholson, R.H. The Douglas S., Cheltenham
Nolan, J. St. Joseph's Comm. Coll., Dumfries
Poole, H.C. *a.* Comm. S., Ripley
²Probyn, B.H. Private tuition
Seabrook, G.P. Maldon Gram. S.
Such, H. Bethany H., Goudhurst
Wright, J.B. *d.* Gram. S., Eccles

²Adams, F.A. Bethany H., Goudhurst
Anderson, C. Argyle H., Sunderland
²Bhuttacharji, M.C. Oxford County S., Thame
Buck, A. Higher-Grade S., Carlisle
²Collins, L.W. West Cliff Coll., Ramsgate
Eastmond, W.A. Bible Christian Coll., Shebbear
²Flatt, E.W. Eastward Ho! Coll., Felixstowe
Fowler, R.A. The Collegiate S., Bowes Park, N.
Friend, G.B. St. Dunstan's College, Margate
²Hardy, L.S. Mundella Hr. Elem. S. Nottingham
²Harrison, B.G. Market Bosworth Gram. S.
Harvey, R. Stafford Coll., Forest Hill
Heddon, N. Taplow Gram. S.
²Hooker, M. Dudley H., Lee, S.E.
Hyde, C.J. Hutton Gram. S.
Keech, C.J.W. Harborough Gram. S., Market Harborough
²Peachey, G.F. Epsom College
Reeves, R.C.J. The Modern S., E. Grinstead
Rumford, H.W. *a.f.* Minster Gram. S., Southwell
Schonhut, A. Thorne Gram. S.
Sequerra, S. *f.* Townley Castle S., Ramsgate
Stevenson, T.H. Tollington Schools, N.
Tomlins, H. *d.* Hanley Castle Gram. S.
²Wells, F.G. Private tuition
Whiteman, E.H. Rye Gram. S.
²Wilkie, R.E.H.F. Brondesbury Coll., Willesden Lane, N.W.
Yates, E.C. Gram. S., Eccles
Yorke, R.C. Tollington Schools, N.

Ashford, D.E. Comm. S., Ripley
²Banks, F.W. Bethany H., Goudhurst
Coates, G. St. Joseph's Comm. College, Dumfries
Hardaker, P. Bailey S., Durham
Hills, C.M. St. Dunstan's Coll., Margate
Horrocks, H. *a.* Catholic Coll. Institute, Manchester
²Ingram, C.E. Vermont Coll., Clapton, N.E.
Jones, J.I. Lindisfarne Coll., Westcliff-on-Sea
Leigh, F. University S., Southport
²Merrin, S.R. Newtown S., Waterford
²Payne, L. Gram. S., Blackpool
Peberdy, W. Hanley Castle Gram. S.
²Salmon, A.de M. University S., Southport

²Broad, A.J. Belvedere, Hayward's Heath
Coope, G.M. *a.* Hutton Gram. S.
Green, R.W. *s.* Battle Hill S., Hexham
²Halliday, P.W. Newtown S., Waterford
Handley, H. *a.* High S., Kirkby Stephen
²Hodgson, H.O. St. Catharine's S., Broxbourne
Jones, T.S. Ruthin Gram. S.
Oliver, J.H. *g.* Alton H., Vanbrugh Park, Blackheath
Parsons, W. *a.* Warwick H., Southsea
Py, F. St. Joseph's Coll., Beulah Hill., S.E.
²Rickards, A.K. Warwick H., Southsea
Scarlett, C.S. West Cliff Coll., Ramsgate
Scattergood, A.H. High Pavement Hr. Elem. S., Nottingham
Sloan, F.A. Sir William Borlase's S., Marlow
Somerville, I.A. Stafford Coll., Forest Hill
Summers, F.W. Market Bosworth Gram. S.
Willis, T.J. Bethany H., Goudhurst

Bauscher, W.E. Hillmartin Coll., Camden Rd., N.W.
Broad, W.E.L. West Cliff Coll., Ramsgate
²Butcher, W.I. Private tuition
Callaghan, T. Catholic Coll. Institute, Manchester
Cohen, W. Margate Jewish Coll.
Everett, J.S. Bethany H., Goudhurst
Gleiser, M.J.L. Uckfield Gram. S.
Glendinning, R. St. Joseph's Comm. Coll., Dumfries
Greatorex, C.St. Catharine's S., Broxbourne
Gruby, T.W. Tudor Hall, Hawkhurst
Isaacs, H. Townley Castle S., Ramsgate
Keywood, W.B. The Modern S., E. Grinstead
²Lambert, C.J. Horsmonden School
²Mainprize, L.R. Bridlington Gram. S.
Mooney, G. Kent House Coll., Anerley
Pearce, G.H. Bethany H., Goudhurst
Ploughman, J.A. Taunton's Trade S., Southampton
Robb, J.R. Battle Hill S., Hexham
Tussaud, J.E. St. George's Coll., Weybridge
Wickens, T.M. Uckfield Gram. S.
Windebank, G. Comm. S., Ripley

Abrams, L. St. Aloysius' S., Hornsey Lane, N.
Bickell, J.H. Tavistock Gram. S.
²Binks, F.G. Old Elvet S., Durham
Carson, A.H. Main Street Schools, Bangor
Hewson, H.H. The Coll., Weston-super-Mare
Humphreys, A. Snettisham School
Hunkin, S.T. Bible Christian Coll., Shebbear
Jackson, S. Hopton Congregational S., Mirfield
Johns, S. *a.* Tavistock Gram. S.
²Lockington, J.I. Ulster Provincial S., Lisburn
Lockyer, C.E. Comm. S., Ripley
Moss, V. Tudor Hall, Hawkhurst
Potts, B.H. Montrose Coll., Brixton Hill
Rees, R.H. Cawley S., Chichester
Richards, C. St. Philip's Gram. S., Edgbaston
Rogers, W. Sir James Smyth's Gram. S., Camelford
Rudd, F.A. Culham Coll. S., Abingdon
²Sharpe, L.J. Oakham School
²Shaw, L.E. Monkton Combe S., nr. Bath
Thurman, F.W. Eastward Ho! Coll., Felixstowe
²Woollard, H. Belvedere, Hayward's Heath

Abrahamson, A. Hythe School
Barclay, R. Montrose Coll., Brixton Hill
Bentall, A.E. Lindisfarne Coll., Westcliff-on-Sea
Bowen, C.L. Ludlow Comm. S.
²Clarke, J.R. Newtown S., Waterford
²Grant, V. Weston S., Bath
²Heather, C.J. Newtown S., Waterford
Higgs, A.S. West Cliff Coll., Ramsgate
Hoskin, J.G. *g.* Wadham S., Liskeard
²Jackson, E.R. Private tuition
Litchfield, W.F. Horsmonden School
Minhinnick, W. Tavistock Gram. S.
Norrish, A.J.H. Stafford Coll., Forest Hill
Owen, H.W.G. Montrose Coll., Brixton Hill
Pickup, J.B. Gram. S., Eccles
²Rees, D.M. Private tuition
²Mighton, W. St. Bartholomew's Gram. S., Newbury
²Sautter, J.C. Tollington Schools, N.
Stamp, E.C. Hillmartin Coll., Camden Rd., N.W.
Turner, F.C. Stafford Coll., Forest Hill
Walsh, T. St. Aloysius' S., Hornsey Lane, N.
Westell, J.W. The Coll., Weston-super-Mare

²Barker, E.C. Private tuition
²Baty, E.T. Private tuition
Beecroft, T. Commercial S., Horsforth, Leeds
Chadwick, S. Rhyl County S.
Chandler, H.V. Tudor Hall, Hawkhurst
Cross, G. *a.* Comm. S., Ripley
Everitt, R.P. Manor H., Havant
Gloster, D. Comm. S., Ripley
Godfrey, W.S. Mount Radford S., Exeter
Kieffer, A.C. Argyle H., Sunderland
Kirk, C. Stafford Coll., Forest Hill
Perkins, A.W. Gram. S., Eccles
Richards, C. *a.* Gram. & Coll. S., Carnarvon
Simpson, A.G. Manor S., York
Twinberrow, J.O. Battle Hill S., Hexham
Voice, H.G. The Modern S., E. Grinstead

Bee, C.J. Taunton's Trade S., Southampton
Bleach, L.S. *a.* Warwick H., Southsea
Chovil, W.A. St. John's Coll., Southend-on-Sea
Coyne, J.R. St. Joseph's Comm. Coll., Dumfries
²Crisford, K.N. Private tuition
Crowe, J.A. Montrose Coll., Brixton Hill
Green, W.P. *a.* St. Philip's Gram. S., Edgbaston
Guader, S. St. Mary's Hall S., Cardiff
²Harries, E.H. Gram. S., Pencader
²Ledsham, A.P. Private tuition
²Osborne, C.V. Private tuition
Potter, R.G. The Modern S., E. Grinstead
Rowcroft, B. West Cliff Coll., Ramsgate
Stevens, J.H. Harlesden College, N.W.
Williams, F.C. Tollington Schools, N.
Woodin, W.E. Bible Christian Coll., Shebbear

Allt, G.B. Hill Croft S., Amhurst Park, N.
Chalk, W.S. Walden H., Herne Bay
²Chaston, E. Modern S., Newcastle-on-Tyne
Discombe, A.H. Horsmonden School
Hepburn, C.J. St. Joseph's Comm. Coll., Dumfries
Johnson, A.B. Central Classes, Long Sutton
Jones, L.E. Richmond Hill School
²O'Leary, D. St. Joseph's Acad., Kennington Rd., S.E.
Piggott, T. Brent Hill S., Hanwell
Prendiville, F.St. George's Coll., Weybridge
Radbourn, R.T. *a.* Culham Coll. S., Abingdon
Ridd, R.S. Tutorial S., Penarth
Vinter, P.M. Hove Coll., Hove

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BOYS, 3RD CLASS, PASS—*Continued.*

²Wakely, E.
Sir Walter St. John's S., Battersea
Wilkinson, L.G. New Coll., Harpenden
Williams, J.R.T.
38 Tavistock Place, Plymouth
Woodcock, C.W.N.
North London High S., Hampstead

Buckley, J.E. *a.*
Middle Class S., Stalybridge
Daft, L. Minster Gram. S., Southwell
Duckworth, L. University S., Southport
Forder, J.L. Ruthin Gram. S.
Hatton, J. *a.* Beverley S., Barnes
²Jones, J. Gram. S., Pencader
Jones, J.E. *a.* Ruthin Gram. S.
Langford-Jones, R.P.
St. Deiniol's, Upper Bangor
Lerwill, W. BibleChristian Coll., Shebbear
Moss, C.J. Tudor Hall, Hawkhurst
Muraille, P.
St. Joseph's Acad., KenningtonRd., S.E.
Perry, G.S. Market Bosworth Gram. S.
Rees, A. County S., Tenby
Steinberg, H. University S., Southport
Woodward, A.H.S. *a.*
Modern S., Newcastle-on-Tyne

Blakeley, T. Gram. S., Eccles
Boffin, S.C. Woodstock Secondary S.
Corke, C.V. *a.* University S., Rochester
²Evans, W.L. Private tuition
Forrester, F.O. Bethany H., Goudhurst
Fox, H.C. The Coll., Waterlooville
Green, H.
St. Joseph's Coll., Beulah Hill, S.E.
Harrison, T.L.
Modern S., Newcastle-on-Tyne
²Jones, C.B.
St. John's Coll., Southend-on-Sea
²Lavery, W.A.
St. Joseph's Comm. Coll., Dumfries
Moore, E.S.C. Richmond Hill School
²Murdoch, T. Gram. S., Eccles
Parkes, G. Brewood Gram S.
Pugh, R.C. Oswestry School
Scale, F.H. Montrose Coll., Brixton Hill
²Urquhart, G. Private tuition
Wainwright, J.T. Tavistock Gram. S.
Weller, F.E. Tudor Hall, Hawkhurst
Whittard, H.A. *a.*
Pierremont Coll., Broadstairs

Arnold, R.C. *d.*
St. Joseph's Comm. Coll., Dumfries
Carroll, B.J.
St. Joseph's Comm. Coll., Dumfries
²Dowling, P. Private tuition
²Glasspool, N. LancasterColl., W.Norwood
²Godfrey, C.E. Taunton School
Gort, F.N. Eastward Ho! Coll., Felixstowe
James, E.B. Hanley Castle Gram. S.
Leach, R. University S., Southport
MacDonald, A.
St. Joseph's Comm. Coll., Dumfries
Malton, M.I. Woodside H., Sutton, Surrey
Matthews, R. County S., Tenby
McFarlane, P.S. Holt H., Cheshunt
Melling, J.S. University S., Southport
Pim, S. Newtown S., Waterford
Potter, S.V. Taplow Gram. S.
Riggs, J. Boys' High School, Ironbridge
²Roberts, R.M. Ruthin Gram. S.
Smith, G.C. *f.* Ivy House, Wallington
Stokes, W.P. St. Deiniol's, Upper Bangor
Sutton, D.E. Gram. S., Eccles
²Sutton, T.G.
African Training Inst., Colwyn Bay

²Antill, W.S. St. Dunstan's Coll., Margate
²Bailey, W.J. Gram. S., Eccles
Bannister, W. Hutton Gram. S.
Bernard, C.E. *f.* Charlecote S., Worthing
Bower, A.G. Snettisham School
Bridge, A.J. *a.* Horsmonden School
Burgess, J.E. The Modern S., Oswestry
Clark, A.S. Gram. S., Eccles
Clark, J.W. Battle Hill S., Hexham
Copp, J.E. Gram. S., Ealing
De Reuzi, E.L. *a.*
Highfield S., Wandsworth Comm., S.W.
Holland, F.
St. Joseph's Comm. Coll., Dumfries
²Hornsby, R.H. Aylwin Coll., Arnside
How, E.S. Bethany H., Goudhurst
²MacKinlay, H.S. Private tuition
Roser, W.
St. Aloysius' S., Hornsey Lane, N.
Ryall, R.W. Rostellan, Brighton
Sniders, A. Margate Jewish Coll.
Stevenson, C. Boys' High S., Iron Bridge
West, G. Belmore H., Cheltenham

Abejdid, E. Townley Castle S., Ramsgate
²Bevan, A.J. Private tuition
Brewitt, C.A.
St. Catharine's S., Broxbourne
Counsell, R.B. The Coll., Weston-s.-Mare
Cummins, T.R. University S., Southport
Evenden, A.R. The Modern S., E.Grinstead
Ferguson, G. Tollington Schools, N.
²Fisher, H.W. Weston S., Bath
Forster, F.J. Battle Hill S., Hexham
Heard, W.G. Tavistock Gram. S.
Hingston, E.
St. John's Coll., Southend-on-Sea
Moulson, L.B. Gram. S., Blackpool
²Newman, A.
Richmond H., Tunbridge Wells
Newman, C. *a.* Culham Coll.S., Abingdon
O'Connor, O. *f.*
St. George's Coll., Weybridge
Phelan, E.
St. George's Comm. Coll., Dumfries
Rickett, J. Holt H., Cheshunt
Rogerson, S.J. Gram.S., Eccles.
Walshe, E.C. St. George's Coll., Weybridge
Webster, J.A. Holt H., Cheshunt

Baker, S. Woodroughs S., Moseley
²Fogerty, A.C. Newtown S., Waterford
Gardner, K.A. Market Bosworth Gram. S.
Green, B.J. Lancaster Coll., W. Norwood
Hewetson, F. *a.* High S., Kirkby Stephen
Lake, W.A. Private tuition
²McGlashan, W.R. Private tuition
Mellor, G. Brewood Gram. S.
²Stocks, G.A. The Portlands, Huddersfield
Waghorn, H.C. TheDouglasS., Cheltenham
Walker, D.B. Comm. S., Ripley
Wayman, R.F. West Cliff Coll., Ramsgate
²Wilkinson, A.G. Blundell's S., Tiverton

²Bagnall, W.K.
Eastward Ho! Coll., Felixstowe
Ball, J.F.
High Pavement Hr. Elem.S., Nottingham
Brassington, C.
St. Philip's Gram. S., Edgbaston
Cole, J.H. Hanley Castle Gram. S.
Cooke, L.P. Horsmonden School
Crossling, T.H.
Modern S., Newcastle-on-Tyne
Delves, N.D. Rye Gram. S.
Elphick, S. Tudor Hall, Hawkhurst
Farrant, S.G. Tudor Hall, Hawkhurst
Ferguson, W.P.
Modern S., Newcastle-on-Tyne
Junguis, E.J.T. New Coll., Harpenden
Kenworthy, R.W. Bethany H., Goudhurst
²Mitchell, N. Oswestry School
Ousey, R.G. Hythe School
Peter, L.G.B.
The School, Wellington Rd., Taunton
Price, R.C. Hythe School
Sharratt, W. *g.* WellingtonS., Heaton Moor

Badger, C.W. *a.* Ludlow Comm. S.
Baker, J.A. University S., Southport
Benjamin, S. Townley Castle S., Ramsgate
Culy, L.V.
High Pavement Hr. Elem.S., Nottingham
Edwards, V. Warwick H., Southsea
²Guillaume, B. Private tuition
Gray, E.A. Tutorial S., Penarth
Hobbs, F.C.
HarboroughGram.S., MarketHarborough
Hollywood, A.C.
Ulster Provincial S., Lisburn
Hoyle, S. Modern S., Newcastle-on-Tyne
Karslake, C.
N. London High S., Hampstead, N.W.
Leavey, E.A. Comm. S., Ripley
²Meltzer, D.S. Brighton Gram. S.
Meynell, W.C.E.
St. Philip's Gram. S., Edgbaston
Milner, C.T. Boys' High S., Iron Bridge
²Needs, H. Boys' High S., Iron Bridge
Paul, E.H. Stafford Coll., Forest Hill
Pendlebury, W.H. Gram. S., Eccles
Pritchard, H.L. *a.*
High Pavement Hr. Elem.S., Nottingham
Rowell, N.L. Battle Hill S., Hexham
²Shrubsall, R.E. Private tuition
²Yates, H. Private tuition

Brinkmann, W.
St. Aloysius' S., Hornsey Lane, N.
Clark, C.J.K.
Modern S., Newcastle-on-Tyne
Goddard, H. EastwardHo!Coll., Felixstowe
²Hadland, H.G. Private tuition
Hawkins, E.C. West Cliff Coll., Ramsgate
Hertslet, C.E. Tollington Schools, N.
Kendall, J. Uckfield Gram. S.
Leonard, S.
St. Joseph's Acad., Kennington Rd., S.E.
Lines, R.P. St. Philip'sGram.S., Edgbaston
Matthews, S.O. *h.* StaffordColl., ForestHill
McKenzie, W. St. Mary's Hall S., Cardiff
Preston, J.C. Ulster Provincial S., Lisburn
Trayer, V.J. Oswestry School
Webster, L.F. MinsterGram.S., Southwell
Wilkeyson, G.B. Mount Radford S., Exeter
²Williams, G. Tudor Hall, Hawkhurst
Yates, W. Private tuition

Bailey, W.E.
Eastward Ho! Coll., Felixstowe
Brady, L.I. St. Philip'sGram.S., Edgbaston
²Kendall, L.W. High S., Camborne
Kent, W.A.
Waterloo & Seaforth Inst., Seaforth
²Nichol, W.R.
Royal Gram. S., Newcastle-on-Tyne
Wright, G.St. Aloysius'S., HorneyLane, N.

Baker, P.E. Gram. S., Worthing
Blyth, E. Gram. S., Ealing
Ewen, W.J.
St. Joseph's Comm. Coll., Dumfries
²Gee, J.R. Gram. S., Eccles
Higgins, G.H. Hanley Castle Gram. S.
Johnson, J.A. UlsterProvincialS., Lisburn
Monier-Williams, R.H. Private tuition
Read, A. The Coll., Weston-super-Mare
²Roach, J.T. Grammar S., Hayle
Shevlin, J.
St. Joseph's Coll., Beulah Hill, S.E.
²Trump, C.H. The Douglas S., Cheltenham
Walsh, L.
St. Joseph's Coll., Beulah Hill, S.E.
Westwood, A.H.
Eastward Ho! Coll., Felixstowe
Willis, H.A.E. Tudor Hall, Hawkhurst

Bamford, C.
St. Joseph's Comm. Coll., Dumfries
Creamer, S.R.F.
N. London High S., Hampstead, N.W.
Doughty, W.D. Beverley S., Barnes
Fielder, C.B. *h.*
N. London High S., Hampstead, N.W.
²Hogg, H.S. Private tuition
Isaacs, S. Townley Castle S., Ramsgate
Lazarus, P. Townley Castle S., Ramsgate
Norris, C. St. Catharine's S., Broxbourne
²Riddell, G. Private tuition
Singleton, W.J. Aylwin Coll., Arnside
Wallace, D.H. LancasterColl., W. Norwood
Whitworth, H. Market Bosworth Gram. S.
Wilson-Jones, D. Holt H., Cheshunt

²Hammond, H.B. Private tuition
Huddleston, M.
St. Joseph's Comm. Coll., Dumfries
Johnson, J.A. UlsterProvincialS., Lisburn
Krauth, J.F.
St. Philip's Gram. S., Edgbaston
Rapley, G.P. Uckfield Gram. S.
Riches, C.H.O. Northgate S., Ipswich
Rogers, F. St. Aloysius'S., HornseyLane, N.
Rumford, E.C. MinsterGram.S., Southwell
Shannon, F.
St. Joseph's Comm. Coll., Dumfries
²Walshe, H.I. St. George'sColl., Weybridge
White, H.S. Bethany H., Goudhurst
Wilcox, A.C. *e.* Woodroughs S., Moseley
Wilson, F.C. The Modern S., E. Grinstead
Woolf, H.M. Oxford H., South Croydon

Corcoran, W.B.
St. George's Coll., Weybridge
Coulson, F.A. Tollington Schools, N.
Ford, W.E. St. Philip'sGram.S., Edgbaston
Gouger, A.J. West Cliff Coll., Ramsgate
Nicholls, W.L. Hanley Castle Gram. S.
Palmer, F.E. *a.* Comm. S., Ripley
Sleight, K.R. Rostellan, Brighton
²Whittle, E. Boy's High S., Wareham

Allen, H.D. Tollington Schools, N.
Duke, W.G. Taplow Gram. S.
Holland, G. Gram. S., Eccles
²Johnson, S. Modern S., King's Heath
²Mountford, M. Private tuition
Murrane, D.H.
St. George's Coll., Weybridge
Paterson, W.C. Douglas Secondary S.
Thomas, M.R. Ruthin Gram. S.

²Bellamy, A. West Cliff Coll., Ramsgate
Bridger, F. Comm. S., Ripley
²Caine, E.P. Private tuition
Chapman, H.J. Newtown S., Waterford
Laurence, C. York H., Folkestone
Miller, H.C. Oxford H., South Croydon
Monk, H.B. The Coll., Waterlooville
Phelan, A.
St. Joseph's Comm. Coll., Dumfries

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CLASS LIST—GIRLS.

(*For list of abbreviations, see page* 352.)

FIRST CLASS [*or* SENIOR].

Honours Division.

Loseby, E. M. *al. gm. l. gr.* Market Bosworth Gram. S.
Wallace, D. V. *f. l. gr. d.* The Hollies, Malvern
Barrington, G. E. *s. h. ge. d.* Upper St. Leonards Ladies' Coll.
Gilmore, J. *gm.* Gordonville Ladies S., Coleraine
Rolfe, E. M. Holborn Estate Girls' S., W.C.
Kellett, K. *ms. d.* Douglas Secondary S.

FIRST CLASS [*or* SENIOR].

Pass Division.

Callister, M. Q. *gm.* Douglas Secondary S.
Dawson, E. M. *s. gm. sd.* Leigh Bank Coll., Leamington Spa
O'Donoghue, M. P.-T. Coll., Everton Valley, L'pool
Murphy, H. St. Mary's Convent, Bruff
Conway, N. St. Mary's Convent, Bruff
Keun, O. *f.* English High S., Pera, Constantinople
Shearborn, M. R. *f.* Brook Green Girls' Coll., W.
Campbell, M. R. *f.* Pupil-Teachers' Coll., Blackburn
Webb, M. L. Friends' S., Mountmellick
Keating, K. P.-T. Coll., Everton Valley, L'pool
Jervois, F. *g.* P.-T. Coll., Everton Valley, L'pool
Cornish, F. N. *sd.* Leigh Bank Coll., Leamington Spa
Gold, A. P. Harborne Ladies' Coll., nr. Birmingham
Short, D. E. *d.* The Coll., Goudhurst
Udall, A. P.-T. Coll., Everton Valley, L'pool
Tebbutt, E. L. *h.* Girls' High. S., Staines
Shovelton, W. St. Michael's S., Malton
Brooks, C. M. Harborne Ladies' Coll., nr. Birmingham
Acheson, N. *ge* Victoria S., Kingstown
Bunker, E. Regent St. Hr.-Grade Girls' S., Plymouth
Weale, M. English High S., Pera, Constantinople
Andreae, S. St. Mary's Convent, Bruff
McCann, E. M. The Convent, Highgate Rd., N.W.
McConnell, M. *ge.* Gordonville Ladies' S., Coleraine
Vokes, L. M. St. John's Coll., Brixton, S.W.
Wall, E. R. Harborne Ladies' Coll., nr. Birmingham
Tucker, M. English High S., Pera, Constantinople
Whistler, W. M. Comm. S., Ripley
Day, L. M. Friends' S., Mountmellick
Hopton, M. L. Harborne Ladies' Coll., nr. Birmingham
Goodbody, A. J. Friends' S., Mountmellick
Hand, N. Woolston Ladies' Coll., Southampton
Hewitt, F. M. Wordsworth College S., Paddington
Galbraith, M. V. *d.* Private tuition
Hartigan, P. St. Mary's Convent, Bruff
Dolan, A. Pupil-Teachers' Coll., Blackburn
Walsh, H. P.-T. Coll., Everton Valley, L'pool.
Busby, E. O. C. Kensington H., York
Hartigan, J. St. Mary's Convent, Bruff
Spedding, D. Stoke Public Higher S., Devonport
Quirk, W. Pupil-Teachers' Coll., Blackburn
Grimmer, J. M. Wordsworth College S., Paddington
Lloyd-Chandos, L. Nantly House Coll., Heston
Rogers, A. F. The Coll., Goudhurst

SECOND CLASS [*or* JUNIOR].

Honours Division.

Bell, J. *s. f.* P.-T. Coll., Everton Valley, L'pool
Batalha-Reis, B. *s. f. d.* The Convent, Highgate Rd., N.W.
Shearburn, M. R. *f.* Brook Green Girls' Coll., W.
Waid, M. E. *e. ch. d.* Douglas Secondary S.
Aylen, M. L. *f.* Douglas Secondary S.
Smith, E. E. *f. d.* George Dixon S., B'ham
Quine, G. *d.* Douglas Secondary S.
Baker, R. M. *s. a. f.* Royal Naval S., Twickenham
Perkin, D. *d.* Skinners' Co.'s S. for Girls, N.
Yewdall, G. H. *ma.* Douglas Secondary S.
Burgess, C. E. *d.* Skinners' Co.'s S. for Girls, N.
Wyley, M. P.-T. Coll., Everton Valley, L'pool
Mole, J. *gm. ma. d.* Rutherford Coll., Newcastle-on-Tyne
Morrow, M. D. *s. e. h. f. ge.* Ladies' S., Newtownards
Small, D. F. Secondary Day S., Regent St., Plymouth
Waterlow, A. *f. d.* Wincham Hall Coll., Northwich
Greer, M. E. M. *s. h. f.* Crievah H., Ballybay, Co. Monaghan
Millen, I. K. *s. f.* Gordonville Ladies' S., Coleraine
Sandle, G. J. *f. d.* Holmcroft S., Bromley, Kent
Morahan, E. P.-T. Coll., Everton Valley, L'pool
Dickson, E. M. *f. d.* Clare Lodge S., Newcastle, Co. Down
Bushby, E. E. Higher-Grade S., Carlisle
O'Neill, J. *d.* St. Mary's Conv., Bruff
O'Shaughnessy, N. *f.* St. Mary's Conv., Bruff
Soldan, M. *ge.* Central Foundation Girls' S., Spital Sq., E
Dunelow, G. M. *d.* George Dixon S., B'ham
Martin, F. E. *s.* Central Foundation Girls' S., Spital Sq., E.
Carroll, H. B. *f. d.* The Convent, The Avenue, Southampton
Finney, A. *d.* Private tuition
Pearn, F. E. *s.* Skinners' Co.'s S. for Girls, N.
Horniblow, G. Harborne Ladies Coll., nr. Birmingham
Neary, M. P.-T. Coll., Everton Valley, L'pool
Sandes, E. E. E. Victoria Coll., Belfast
Lucas, K. *d.* George Dixon S., Birmingham
Palmer, M. E. *f. mu.* St. Margaret's S., Streatham Common
Robbins, M. G. *s. f.* Castlebar High S., Ealing
Day, M. E. *d.* Skinners' Co.'s S. for Girls, N.
Binns, A. *d.* English High S., Pera, Constantinople
Emery, K. H. *d.* Skinners' Co.'s S. for Girls, N.
Ottewell, M. *d.* Douglas Secondary S.

SECOND CLASS [*or* JUNIOR].

Pass Division.

[1]Watkin, I. L. *gm.* The Convent, Highgate Rd., N.W.
[1]Jones, G. K. P. Boughrood H., Brecon
Roche, K. A. *f.* The Convent, Highgate Rd., N.W.
[1]Kerans, E. M. Friends' S., Mountmellick
[1]Lovett, M. *g.* P.-T. Coll., Everton Valley, L'pool
Murphy, C. *sh.* Holborn Estate Girls' S., W.C.
Abrey, A. M. Skinners' Co.'s S. for Girls, N.
Glenn, H. A. Mundella Higher Elem. S., Nottingham
Abbott, A. A. *s. f.* Royal Naval S., Twickenham
Johnstone, A. McK. Higher-Grade S., Carlisle
Lyons, M. E. *s.* Victoria Coll., Belfast
O'Connell, A. P.-T. Coll., Everton Valley, L'pool
Palmer, F. M. *d.* Mundella Higher Elem. S., Nottingham
Topping, E. Higher-Grade S., Carlisle
Lewin, M. *ma. d.* Douglas Secondary S.
Lyall, L. *s.* 4 Ashwood Villas, Leeds
McDonald, M. R. Higher-Grade S., Carlisle
Parker, M. A. *f. d.* Oxford H., St. Leonards-on-Sea
[1]Lee, L. The Convent, The Avenue, Southampton
Moon, D. *s. d.* Rye Coll. S.
[1]Green, G. R. Private tuition
Holmes, N. *d.* Regent St. Hr.-Grade Girls' S., Plymouth
Waite, H. M. S. *f.* Higher-Grade S., Carlisle
McCarraher, M. N. *f.* Freemantle High S., Southampton
Punchard, D. E. *f.* South Croydon Coll., Croydon
Tibbit, M. C. *d.* Gainsborough H., Worthing
[1]Corrigan, M. Pupil-Teachers' Coll., Blackburn
Davey, I. *s. d.* Newton Heath S., Middlewich
Hardy, M. Polam Hall, Darlington
Westhead, T. P.-T. Coll., Everton Valley, L'pool.
Wrentmore, E. H. *s. f. ge.* The Hollies, Malvern
Avant, E. R. Northern Polytech. Day S., Holloway Rd.
Bridson, E. C. Douglas Secondary S.
Dunford, M. L. *s.* Wordsworth College S., Paddington
Puxley, P. P.-T. Coll., Everton Valley, L'pool
[1]Goodman, M. E. Comm. S., Ripley
Salerian, E. *d.* English High S., Pera, Constantinople
March, E. R. Holborn Estate Girls' S., W.C.
[1]Winter, J. E. W. Private tuition
[1]Herbert, K. The Coll., Goudhurst
[1]Jackson, G. T. Granville H., Gravesend
Lace, M. M. *d.* Douglas Secondary S.
Paddon, J. E. Private tuition
Barker, A. E. Girls' S., Promenade, South Shore, B'pool
Linton, I. Bitterne H., Bitterne
[1]Merrick, C. P.-T. Coll., Everton Valley, Liverpool
Raves, C. D. J. *d.* Skinners' Co.'s S. for Girls, N.
Harris, A. Central Foundation Girls' S., Spital Sq., E.
Hobbs, M. E. *f.* Dulwich Hamlet County Council S.
Mahony, K. The Convent, Highgate Rd., N.W.
Sutton, C. Rutherford Coll., Newcastle-on-Tyne
Lenn, F. D. Central Foundation Girls' S., Spital Sq., E.
[1]Lofts, M. The Coll., Goudhurst
Woolley, H. F. *s. f.* The Hollies, Malvern
Andrews, C. A. *ch.* Private tuition
[1]Byrne, M. M. Highwood H. Girls' S., Liskeard
Davies, A. E. *d.* Mundella Higher Elem. S., Nottingham
Falconer, E. M. *s. d.* Westwood, Maldon
[1]Faulkner, E. M. Clarendon H., Reigate
Nuthall, R. A. Denmark Coll., Wimbledon
Petitpont, M. *s. f. ge.* Conv. of the Assumption, Richmond, Yorks
Trench, L. A. *d.* The Coll., Goudhurst
Brown, M. C. Fulford Field H., York
[1]Corbyn, E. E. Oakley High S., Southsea
Beechine, J. M. Central Foundation Girls' S., Spital Sq., E.
Boardman, O. G. George Dixon S., Birmingham
[1]Lewis, A. C. High S. for Girls, Lampeter
Smitham, J. C. *f.* High S. for Girls, Tavistock
Turner, B. C. Central Foundation Girls' S., Spital Sq., E.
Amies, F. E. Rhianva Coll., Hunstanton
[1]Lowe, M. P.-T. Coll., Everton Valley, Liverpool
Paden, H. P.-T. Coll., Everton Valley, Liverpool
Palmer, W. C. *d.* Liddon Memorial S., Kentish Town, N.W.
Donaghy, M. P.-T. Coll., Everton Valley, Liverpool
Jones, E. M. Cranley H., Muswell Hill, N.
[1]Purcell, A. P.-T. Coll., Everton Valley, L'pool
Dunnett, V. M. *f.* Private tuition
[1]Jameson, H. F. Upper St. Leonards Ladies' Coll.
[1]McInity, B. P.-T. Coll., Everton Valley, L'pool
Milliken, J. P.-T. Coll., Everton Valley, L'pool
Pemberton, E. *f.* Private tuition
Spencer, M. *d.* Skinners' Co.'s S. for Girls, N.
Bosworth, L. M. Dunmore, St. Leonards
Coffin, M. A. *f. d.* Girton H., Chislehurst West.
Pulleyn, E. D. *h. d.* Private tuition
[1]Richardson, E. *d.* Private tuition
Brown, J. Higher-Grade S., Carlisle
Gibson, R. 4 Ashwood Villas, Leeds
Humphreys, D. A. Hainault H., Ilford
Pickup, A. Convent Higher-Grade S., Blackburn
[1]Robinson, M. B. Wincham Hall Coll., Northwich
Stops, E. F. *d.* Rhianva Coll., Hunstanton
Field, D. K. Central Classes, Long Sutton
Lowenstein, E. *f.* Blagdon, Eastbourne
[1]McGovern, A. Pupil-Teachers' Coll., Blackburn
Smith, R. B. Malvern H., Lewisham Pk., S.E.
Stiles, K. M. Grosvenor Lodge S., Wallington
Wilkinson, M. L. *d.* Mundella Higher Elem. S., Nottingham
[1]Cawsey, G. Stoke Public Higher S., Devonport
Cove, K. M. Skinners' Co.'s S. for Girls, N.
Dence, M. C. Private tuition
Edmonds, E. K. Skinners' Co.'s S. for Girls, N.
[1]Livesay, E. Pupil-Teachers' Coll., Blackburn
Parke, E. J. *f.* Clare Lodge S., Newcastle, Co. Down
Gardiner, L. A. Dulwich Hamlet County Council S.
Macgregor, C. M. *f.* Woodside H., Sutton
Challinor, E. H. Newton Heath S., Middlewich
Cornish, E. M. Leigh Bank Coll., Leamington Spa
[1]Joslin, M. E. Avon H., Southsea
Harris, L. Advanced Elem. Girls' S., Merthyr Tydfil
Martin, G. *g.* Stoke Public Higher S., Devonport
Matthews, M. L. *s. f.* Royal Naval S., Twickenham
Simmons, J. St. Mary's Convent, Bruff
[1]Bull, H. M. E. Private tuition
[1]Abbott, E. L. Headland Park S., Plymouth
Dickens, F. H. Dulwich Hamlet County Council S.
Hall, C. I. The Magnolias, Southsea
Heasman, M. Dulwich Hamlet County Council S.
Mitchell, I. M. E. Wincham Hall Coll., Northwich
Powell, M. Shrubbery H., Staple Hill, Bristol
Sugden, D. E. Hainault H., Ilford
Bishop, N. Advanced Elem. Girls' S., Merthyr Tydfil
French, H. M. Skinners' Co.'s S. for Girls, N.
[1]Gornall, A. Pupil-Teachers' Coll., Blackburn
Waldron, E. A. M. University S., Rochester
Astill, G. H. Barton H., West Bridgford
Halkett, M. K. E. *s. f.* Downs S., Walmer
Harman, E. R. Manor H., Brixton Hill, S.W.
Irwin, C. Aintree High S., Liverpool
Palmer, A. M. *s.* Snettisham School
Rowan, L. W. *f.* Victoria Coll., Belfast
Wilson, E. M. Victoria Coll., Belfast
Betts, G. S. *f. ge.* S. Hampstead High S., N.W.
[1]Eltringham, C. M. Alexandra Coll., Hastings
Guill, J. M. Stafford Coll., Forest Hill
Hambleton, E. K. Felix High S., Wandsworth Comm.
Hayes, B. P.-T. Coll., Everton Valley, Liverpool
Rich, W. N. *d.* Battersea Polytechnic Science S., S.W.
Williams, H. F. *f.* Leigh Bank Coll., Leamington Spa
Averill, D. E. The Convent, The Avenue, Southampton
Dunn, R. M. Regent St. Hr.-Grade Girls' S., Plymouth
Hart, M. P.-T. Coll., Everton Valley, Liverpool
Locke, C. M. The Coll., Goudhurst
McVea, M. Brookvale Coll. S., Belfast
Samuel, P. Hazelhurst, Penarth
[1]Smerdon, E. I. Regent St. Hr.-Grade Girls' S., Plymouth
Acheson, M. *f.* Victoria Coll., Belfast
Doidge, M. M. *f.* High S. for Girls, Tavistock
[1]Guy, E. P.-T. Coll., Everton Valley, Liverpool
[1]Peat, D. M. Clarendon H., Reigate
Jefferson, J. A. Regent St. Hr.-Grade Girls' S., Plymouth
Kelly, D. 39 Lisburn Rd., Belfast
Milton, A. F. Hainault H., Ilford
Tchacon, L. *f.* Ch. of Scot. S., Hasskein, Constantinople
Benscher, D. R. Geneva H., Brondesbury, N.W.

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GIRLS, 2ND CLASS, PASS—*Continued.*

Mullan, K.
P.-T. Coll., Everton Valley, L'pool
Salt, E.E.
Leigh Bank Coll., Leamington Spa

Smith, F.E.
Mundella Higher Elem. S., Nottingham
Williams, I.I.V. Grange S., Ealing

Bell, W.E. Higher-Grade S., Carlisle
Bourri, S.A. *h.f.* Private tuition
Drieson, E.M. *d.*
St. Marylebone Higher-GradeS., W.
Fitz Gibbon, G.
The Convent, Highgate Rd., N.W.
Ford, G.
Ecole Normale de Notre Dame, Namur
Fyfe, A. *f.* Aberlour S.
Hettinger, R. *ge.* WindsorHighS., Wavertree

Bailey, B. Blagdon, Eastbourne
Belile, L.
St. Peter's Coll. S., Fulham Rd., S.W.
Fairbrother, I.M. The Coll., Goudhurst
Perkin, M.I. *f.* High S. for Girls, Tavistock

Coulles, S.R.
Regent St. Hr.-Grade Girls' S., Plymouth
Dennis, D. Skinners' Co.'s S. for Girls, N.
Jones, M. High S. for Girls, Lampeter
[1]Lunn, M. The Southend S., Winchester
McLoughlin, M.A.
P.-T. Coll., Everton Valley, L'pool

Murphy, B.
P.-T. Coll., Everton Valley, L'pool
Woolnough, D.K.
Cranley H., Muswell Hill, N.

Davis, F.M. The Coll., Goudhurst
Denning, F.M.V. *f.* Private tuition
Edwards, W.M.V.M.
Advanced Elem. Girls' S., Merthyr Tydfil
Kelly, E. St. John the Baptist S., Brighton
Lockington, G.
Harlesden Coll., Bramshill Rd., N.W.
Scragg, M.E. *mu.*
High Bank Ladies' S., Altrincham

Robertson, E.C.
Monkside High S., Hastings
Scarisbrick, J.
P.-T. Coll., Everton Valley, L'pool
Sealy, E. The Convent, HighgateRd., N.W.

Abraham, E.
Fenwick Coll., E. Dulwich, S.E.
Miller, M.E.
Rutherford Coll., Newcastle-on-Tyne
Rendal, L. Higher-Grade S., Carlisle

Frith, A. Kensington H., York
Kendon, E.W. The Coll., Goudhurst
Madden, E.J.
Holborn Estate Girls' S., W.C.
Quaggin, A.M. Douglas Secondary S.
Williams, L.F.M.
Wincham Hall Coll., Northwick

Carruthers, L. Higher-Grade S., Carlisle
Gand, D. *f.* High S. for Girls, Tavistock
[1]Salmon, A.
Pupil Teachers' Coll., Blackburn
Seeley, D.B. Alexandra Coll., Hastings

Conlon, A.
P.-T. Coll., Everton Valley, L'pool
[1]Cox, C.M. Private tuition
Griffin, Q.E. Skinners' Co.'s S. for Girls, N.
Scott, M. Pupil-Teachers' Coll., Blackburn
Standring, B.L. Higher-Grade S., Carlisle
Wilson, M. Higher-Grade S., Carlisle
Townley, D.M. Alwyne Coll., Canonbury
Foster, I. Spring Hill H., Tavistock
Sanders, M. Sherwood S., Woolwich
Squire, W.G. Private tuition
Stubington, H.U.
Geneva H., Brondesbury, N.W.
Taylor, G.M. *d.* Colline S., Leeds
Goldstein, E.
CentralFoundationGirls'S., SpitalSq., E.
Graham, R.J. Alexandra S., Youghal
Greenwood, E.
The Convent, The Avenue, Southampton

Gatley, L.M. Lyndale Coll., Worthing
Insley, A. *f.* Private tuition
West, U.M. UpperSt. LeonardsLadies'Coll.
Smith, E.M. Ashburnham H., Southboro'
Bowhay, E.M.W. Spring Hill H., Tavistock
Cornish, A.M.
Leigh Bank Coll., Leamington Spa
Winbush, D.E.
Geneva H., Brondesbury, N.W.
Wordsworth, C.
Conv. of Mercy, Clifford, Boston Spa

Dunlea, E.
P.-T. Coll., Everton Valley, L'pool
Earlam, J.B. *f.* Private tuition

Berney, H. Brunt's Technical S., Mansfield
MacNulty, N.
P.-T. Coll., Everton Valley, L'pool

Foote, F.V.
Freemantle High S., Southampton
Pinnock, F.E. Private tuition
Plowman, M.J. KempstowH., MalvernLink
Walker, F.E. Wisteria H., Uckfield

Beales, A.M.
Pengwern Coll., Pittville, Cheltenham

McAdam, L.L. Douglas Secondary S.
McManus, E.
P.-T. Coll., Everton Valley, L'pool
Veale, L.C. Spring Hill H., Tavistock

Bowes, A.H. 7GrangeCrescent, Sunderland
Farrant, W.M. PeardonS., HolcombeRogus
Kellet, A. Higher-Grade S., Carlisle
[1]Murray, C.
P.-T. Coll., Everton Valley, L'pool
Williamson, C.M.
Upper St. Leonards Ladies' Coll.

Forshaw, E.M.
Pengwern Coll., Pittville, Cheltenham
Lampel, A. Mansfield H., Maida Vale
Waterlow, H.P. *f.*
Wincham Hall Coll., Northwich

Parle, V.
P.-T. Coll., Everton Valley, L'pool
Smith, M. Brookvale Coll. S., Belfast
Swain, I. Newton H., Tunbridge Wells
Smith, E. Brookvale Coll. S., Belfast
Beale, L.E.A. Alexandra Coll., Hastings
Griffin, E. Pupil-Teachers' Coll., Blackburn

THIRD CLASS.

Honours Division.

Likiadopoulos, C. *e.h.a.al.gm.f.*
English High S., Pera, Constantinople
Schneider, N.V. *s.e.g.f.d.*
Skinners' Co.'s S. for Girls, N.
Dixon, M.H. *e.g.a.f.d.*
Skinners' Co.'s S. for Girls, N.
Tibbitts, E.E. *e.g.a.f.d.*
Skinners' Co.'s S. for Girls, N.
Nash, E.M. *e.g.a.d.*
Skinners' Co.'s S. for Girls, N.
Richards, F. *e.h.g.a.*
Advanced Elem. Girls' S., Merthyr Tydfil
Aldridge, D. *s.e.*
Skinners' Co.'s S. for Girls, N.
Edwards, B.E. *e.g.a.d.*
Skinners' Co.'s S. for Girls, N.
Hill, D.A. *e.* Holmcroft S., Bromley, Kent
Mayhall, A. *e.a.d.* Douglas Secondary S.
Solomon, A. *e.a.*
Skinners' Co.'s S. for Girls, N.
Wattson, H.G.S. *d.*
Skinners' Co.'s S. for Girls, N.

Fleeman, A.E. *s.f.*
Sea View, St. Anne's-on-Sea
Walters, O. *h.g.a.*
Stoke Public Higher S., Devonport
Vieillot, M.T. *e.f.*
English High S., Pera, Constantinople

Mills, V.A.M. *e.a.f.*
Ashley High S., Long Sutton
Perbost, J.M.R. *f.* Girton H., Ealing

Cooper, A.L. *e.f.*
Hyde H., Tollington Park, N.
Hayward, N.W. *s.e.f.*
Pengwern Coll., Pittville, Cheltenham
Seegar, M. *e.a.al.*
Skinners' Co.'s S. for Girls, N.
Webb, S.S. *e.f.* Friends' S., Mountmellick

Malkass, M. *e.f.*
English High S., Pera, Constantinople
Oakley, V. *e.h.g.a.d.*
St. Mary's Convent, Middlesbrough
Green, I. *a.d.*
High Pavement Hr. Elem. S., Nottingham

Apthorp, G.I.F. *e.f.*
Wincham Hall Coll., Northwich
Atkinson, C.D. *e.f.* Victoria Coll., Belfast
Draper, G.E. *e.f.*
Skinners' Co.'s S. for Girls, N.
Lombardo, H. *f.*
English High S., Pera, Constantinople

Aguilar, E. *s.f.* Alexandra Coll., Hastings
Buzzard, M. *g.* Llanberis, Ealing
Chalmers, M.E.J. *e.f.*
St. Kilda's Coll., Bristol
Rogers, J. *e.f.*
Skinners' Co.'s S. for Girls, N.

Downey, W.W. *e.f.d.*
Princess Gardens S., Belfast
Manly, L.G. *e.a.*
Skinners' Co.'s S. for Girls, N.
Rawson, D. *a.d.*
High Pavement Hr. Elem. S., Nottingham

Bradley, F. *s.e.a.*
Dulwich Hamlet County Council S.
Dixon, A.D.L. *a.f.*
15 Vyvyan Terrace, Clifton, Bristol
Griffin, J.M. *f.* The Hollies, Malvern
Lamb, V.E.E. *e.a.*
Skinners' Co.'s S. for Girls, N.
McCormick, G. *e.a.f.*
Knock Intermediate S., Belfast
Nurse, W.M. *e.a.f.*
Skinners' Co.'s S. for Girls, N.
Palmer, L. *s.e.g.a.mu.* Rye Coll. S.
Worrall, B.I. *e.a.sc.* Douglas SecondaryS.

Haughton, A.E. *e.gm.*
Friends' S., Mountmellick
Hills, C. *e.g.f.* BradbourneColl., Sevenoaks

Douglas, E.G. *e.a.* Douglas Secondary S.

Fellows, R.
Leigh Bank Coll.. Leamington Spa
Flecknoe, E.M.L.
Rhianva Coll., Hunstanton
Matthews, M.J. *e.a.*
Advanced Elem. Girls' S., Merthyr Tydfil
Reynolds, E.G. *e.g.f.*
Girls'S., Promenade, SouthShore, Blackp'l
Tindall, E.M. *e.g.f.*
Upper St. Leonards Ladies' Coll.
Whitwill, M.W. *s.e.f.*
15 Vyvyan Terrace, Clifton, Bristol
Williams, R.J. *a.*
Advanced Elem. Girls'S., Merthyr Tydfil

Binns, M. *f.*
English High S., Pera, Constantinople
Challice, M.D. *s.e.f.*
Gainsborough H., Worthing
McDonnell, A. *e.a.*
St. Mary's Convent, Bruff
Wright, T. *e.g.a.*
St. Mary's Convent, Middlesbrough

Bertie, C.C. *e.d.* Finsbury Park HighS., N.
Chapman, E. *e.f.* Friends'S., Mountmellick
Claypole, F.E. *g.*
Rhianva Coll., Hunstanton
Cornford, D.K. *e.f.d.*
Skinners' Co.'s S. for Girls, N.
Millen, D. *e.h.g.a.*
Bradbourne Coll., Sevenoaks
Pearson, M.H. *a.*
Market Bosworth Gram. S.
Weale, N. *f.*
English High S., Pera, Constantinople

Cheves, K.D. *f.i.* Private tuition
Lyall, C. 4 Ashwood Villas, Leeds

Bennett, F.E. *e.* Friends' S., Mountmellick
Cochrane, F. *h.f.*
Raleigh MemorialS., StokeNewington, N.
Harbon, D. *s.e.g.f.* Osborn H., Redditch
Merson, C.M. PearcloseS., HolcombeRogus
Morrow, M.K. *a.f.* Victoria Coll., Belfast
Roberts, M. *a.* Rhyl County S.
Willis, G. *a.f.*
Secondary Day S., Regent St., Plymouth

Beynon, F.E. *e.a.*
Advanced Elem. Girls' S., Merthyr Tydfil
Buck, E.F. *s.g.*
Ashley High S., Long Sutton
Cunnington, R.D. *d.*
The Vicarage S., Clapham Comm., S.W.
Davys, W. *e.g.f.*
Bradbourne Coll., Sevenoaks
Hadley, G. CampH., Bourton-on-the-Water
Jones, W. *e.a.f.* Rathgar S., Dublin
Martin, E. *d.*
Regent St. Higher-GradeGirls'S., Plym'th
Speak, L.A. *e.a.* Fulford Field H., York
Weston, N.R. *a.f.* Wirksworth Gram. S.
White, M. *e.f.* Friends' S., Mountmellick
Young, M.K. *f.d.* Llanberis, Ealing

Bairsto, L. *e.a.* Aintree High S., L'pool
Brown, M. *e.g.* Newton H., Tunbridge Wells
Charlton, A. *e.a.f.*
Higher-Grade S., Carlisle
Finnegan, A.M. *e.*
Princess Gardens S., Belfast
Miles, H. *e.a.* Higher-Grade S., Carlisle
Pollitt, M. *a.gm.*
Advanced Elem. Girls'S., Merthyr Tydfil
Stephens, E.
Regent St. Hr.-Grade Girls' S., Plymouth

Bennett, C.A. *d.*
The Vicarage S., Clapham Comm., S.W.
Darroch, J.W. *e.*
Skinners' Co.'s S. for Girls, N.
Davies, G.F.M. *a.f.*
Upper St. Leonards Ladies' Coll.
Fatherly, E.M. *e.a.* Fulford Field H., York
Morrow, M. *e.f.* Ladies' S., Newtownards
Pearson, O.F. *s.e.f.* The Hollies, Malvern
Potter, A.A. *e.g.f.d.*
Fairfield Head H., Chesterfield
Richardson, K. *s.e.h.g.f.*
Bradbourne Coll., Sevenoaks
Usher, E.E.F.
The Vicarage S., Clapham Common, S.W.

Evans, L.A. *f.* Rhyl County S,
Faulkner, M.E. *s.e.a.*
Central Classes, Long Sutton
Hutcheon, A.B. *e.a.* Douglas Secondary S.
Kerr, A.D. *e.a.*
Pengwern Coll., Pittville, Cheltenham
McGillivray, A.M. *e.*
Advan. Elem. Girls' S., Merthyr Tydfil
Merchant, W.E. *f.* Wirksworth Gram. S.
O'Sullivan, M. *e.f.* St. Mary'sConvent, Bruff
Taylor, P. *e.a.* Douglas Secondary S.
Thomas, A. *e.a.gm.*
Advanced Elem. Girls' S., Merthyr Tydfil
Walker, A. Malvern S., Leeds
Wilson, F. *e.* Skinners' Co.'s S. for Girls, N.
Yates, E.A. *e.g.*
Upper St. Leonards Ladies' Coll.

Abrahams, N. *a.f.*
Skinners' Co.'s School for Girls, N.
Barker, H.F. Malvern S., Leeds
Blackell, L. *f.*
RegentSt. Hr.-Grade Girls' S., Plymouth
Blum, H.R. *e.a.* Hainault H., Ilford
Clark, D. *g.* Japonica H., Exmouth

Dickman, E.C. *s.f.* Private tuition
Edington, H.A. *e.a.* CamdenRd.Coll.S., N.
Niesz, G.C. *e.a.f.ge.*
Fairhaven High S., nr. Lytham
Trimble, J. *f.* Victoria Coll., Belfast
Woodhead, M.E. *a.*
Skinners' Co.'s S. for Girls, N.

THIRD CLASS.

Pass Division.

[2]Hammer, M.E. *s.*
Skinners' Co.'s S. for Girls, N.
[2]Smith, E.L. *f.d.*
George Dixon S., Birmingham
[2]Cooper, H.S. MountsideHighS., Hastings
[2]Cargill, M. *f.d.* Polam Hall, Darlington
[2]Fincher, M.C. Old Palace S., Croydon
[2]Christian, S. *ma.* Douglas Secondary S.
[2]Corcoran, H.
P.-T. Coll., Everton Valley, L'pool
[2]Jayne, I.E.F. Boughrood H., Brecon.
[2]Cregan, A. *d.* St. Mary's Conv. Bruff
[2]Harrison, E.M. *bk.*
Clydesdale S., Stockport
[2]Gaskins, M.B.
Grosvenor Lodge S., Wallington
[2]Aubert, M.J.L. *f.d.*
Willesden High S., Craven Park, N.W.
[2]Hutchinson, M.A. *F s.f.*
Torhill Coll., Hastings
[2]Marten, G.K. The Coll., Goudhurst
[2]Whitesides, V.
Northern Polytechnic DayS., HollowayRd.
[2]Bateman, E. Newton H., Tunbridge Wells
[2]Dywien, S.
Central Foundation Girls'S., Spital Sq., E.
[2]Chivers, S. Holborn Estate Girls'S., W.C.
[2]Bradly, H.J.V.
Skinners' Co.'s S. for Girls, N.
[2]Payne, G.M.
Upper St. Leonards Ladies' Coll.
[2]Cunliffe, A.B.
Upper St. Leonards Ladies' Coll.
[2]Shillingford, M.K. *d.*
Malvern H., Lewisham Park, S.E.
[2]Wright, E. *d.*
Upper St. Leonards Ladies' Coll.

[2]Brooks, D.
Convent Higher-Grade S., Blackburn
[2]Parry, J. HighBankLadies'S., Altrincham

[2]Forrester, A. *d.* The Coll., Goudhurst
[2]Graham, S.E.
Rutherford Coll., Newcastle-on-Tyne
[2]Southworth, A.
Convent Higher-Grade S., Blackburn

[2]Gibson, G.L. *d.*
Mundella Higher Elem. S., Nottingham
[2]Lewis, E. *d.*
Mundella Higher Elem. S., Nottingham
[2]Todd, B. Higher-Grade S., Carlisle

[2]Curtis, M. Rathgar S., Dublin
[2]Killick, E.
Upper St. Leonards Ladies' Coll.

[2]Jones, G.M. Boughrood H., Brecon
[2]Rimmer, E.
P.-T. Coll., Everton Valley, L'pool
[2]Frost, U.
Advanced Elem. Girls' S., Merthyr Tydfil
[2]Knight, A.M. *s.*
Kempstow H., Malvern Link
[2]Luck, E. Polam Hall, Darlington
[2]Lupton, G.F. Private tuition
[2]McCarraher, C.
Freemantle High S., Southampton
[2]Ryan, L. St. Mary's Convent, Bruff

[2]Butler, K.M.R.
CentralFoundationGirls'S., SpitalSq., E.
[2]Klingender, M.M.
Conv. of the Sacred Heart, Hammersmith
[2]Nicholson, D.F.
Fartown Gram. S., Huddersfield

[2]Abrahams, A.V. Grosvenor Coll., Bath
[2]Dennis, G.O. *d.* The Coll., Goudhurst
[2]Larkin, C.L. The Coll., Goudhurst
[2]Stillwell, G.M.
Central Foundation Girls'S., SpitalSq., E.

[2]Francis, E.
African Training Inst., Colwyn Bay
[2]Jefferson, M.
Secondary Day S., Regent St., Plymouth
[2]McDonough, J. St. Mary's Convent, Bruff
[2]Shortridge, A.
Rutherford Coll., Newcastle-on-Tyne

[2]Foley, M.
Advanced Elem. Girls' S., Merthyr Tydfil
[2]Harvest, M.E.
Girls' S., Promenade, South Shore, B'pool
[2]Phillips, L.E. Private tuition
[2]Bailey, E.
P.-T. Coll., Everton Valley, Liverpool
[2]Colgate, W.E.
Carlen S. for Girls, Peckham Rye, S.E.
Sarafoglon, F. *d.*
English High S., Pera, Constantinople
[2]Blizard, F.
Woolston Ladies' Coll., Southampton
[2]Burfitt, E.K Ridgmont S., Bristol
[2]Smyth, E.V. Victoria Coll., Belfast

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GIRLS, 3RD CLASS, PASS, *Continued.*

Cubby, V. *a.f.* Higher-Grade S., Carlisle
Gibson, E.A. *e.a.f.*
Friends' S., Mountmellick
²Greenhill, E.D. West View S., Alstonefield
²Hay, E.C. *f.d.*
Gordonville Ladies' S., Coleraine
Hope, E.A.M. *e.f.* Private tuition
²Hubbard, M.H. *d.* The Coll., Goudhurst
Hudson, E.G. *a.f.*
Ashburnham H., Southborough
Jackson, M.L. *g.f.*
Upper St. Leonards Ladies' Coll.
Lloyd, W.
Raleigh Memorial S., Stoke Newington, N.
Parseghian, M. *f.*
English High S., Pera, Constantinople
Steel, G.H. *e.f.*
Upper St. Leonards Ladies' Coll.
²Wigston, J. Higher-Grade S., Carlisle

Barry, F. *e.a.* St. Mary's Convent, Bruff
Bevern, I.M. *e.f.*
Upper St. Leonards Ladies' Coll.
Bourke, E. *a.* St. Mary's Convent, Bruff
Charnley, M. *s.e.*
Ravenscourt H., Ravenscourt Pk., W.
Davies, E.J. *e.a.*
Advanced Elem. Girls' S., Merthyr Tydfil
Docton, F.B. *e.a.*
Advanced Elem. Girls' S., Merthyr Tydfil
Flisher, E.M. Rye Coll. S.
Ford, A. *e.*
Secondary Day S., Regent St., Plymouth
²Gardner, A.M.
Holborn Estate Girls' S., W.C.
²Gormley, M.
P.-T. Coll., Everton Valley, L'pool
²Griffiths, M.J. University S., Rochester
Hodgson, M.A. *e.g.*
Felix H., East Dulwich, S.E.
Hudner, A. *e.a.* St. Mary's Convent, Bruff
Hutchins, L.K. *e.* St. Margaret's S., Cardiff
²Lowsley, C.M. High S., Reading
Millard, L.M. *e.f.*
15 Vyvyan Terrace, Clifton, Bristol
²Pilliet, M.A. Private tuition

²Anderson, M. Victoria Coll., Belfast
Caine, A.I. *e.* Douglas Secondary S.
²Coghlan, B.
P.-T. Coll., Everton Valley, L'pool
Collis, M. *f.*
The Convent, The Avenue, Southampton
Davison, B.M. *e.f.* Private tuition
Griffiths, G. *e.*
Advanced Elem. Girls' S., Merthyr Tydfil
²How, D.R. The Coll., Goudhurst
²How, G.L. The Coll., Goudhurst
²Ibbotson, J.
Convent Higher-Grade S., Blackburn
Lawson, F.M. Ashley High S., Long Sutton
MacHardy, E.
High Pavement Hr. Elem S., Nottingham
Panton, P.I. *e.*
Pengwern Coll., Pittville, Cheltenham
Roberts, A.J. *a.* Rhyl County S.
Roughan, A.
The Convent, The Avenue, Southampton
Rudge, G. *e.f.* Bradbourne Coll., Sevenoaks

²Beck, G. Victoria Coll., Belfast
Brown, E.J. Skinners' Co.'s S. for Girls, N.
Edmonds, A.M. *a.* The Hollies, Malvern
Gubbins, M.T. *a.* St. Mary's Convent, Bruff
Kelly, L. *e.f.*
St. Ursula's S., Westbury-on-Trym
²Lee, E.A. *d.* Private tuition
Paine, D. Temple Square S., Aylesbury
Potter, M. *s.e.* Bradbourne Coll., Sevenoaks
²Sapey, C.P. The Coll., Goudhurst
Tattersall, E.E.G. Victoria Coll., Belfast
Whatmore, F.M.
High Pavement Hr. Elem.S., Nottingham

²Bourne, C.
St. John the Baptist S., Brighton
²Cohen, F. *s.f.*
Ch. of Scot. S., Hasskein, Constantinople
Crawford, J.I. *d.*
Skinners' Co.'s S. for Girls, N.
Foden, H. *f.* Park H., Hale, Altrincham
²Goode, E.
Central Foundation Girls' S., Spital Sq. E.
²Hirschbein, B.
Skinners' Co.'s S. for Girls, N.
²Stewart, C. Higher-Grade S., Carlisle
Thom, J. *g.* Bradbourne Coll., Sevenoaks
Urell, N. *a.*
Regent St. Hr.-Grade Girls' S., Plymouth
Wilkinson, G. *e.*
Carden S., for Girls, Peckham Rye, S.E.

Barrett, I. *a.f.*
Raleigh Memorial S., Stoke Newington, N.
Clery, E. *e.g.a.* St. Mary's Convent, Bruff
Goodall, C.H. *s.a.d.*
Ballina House High S., Brixton Hill, S.W.
²Hammond, E.
St. Winifred's High S., Southampton
Hope, C.E.M. *e.* Private tuition
²Jones, M.G. High S. for Girls, Lampeter
²Kittow, N.K. Chesterville S., Cirencester
²Lamplough, M. Kensington H., York
²Martin, S.J.B. *f.*
Rosetta Girls' High S., Belfast
McCutcheon, A. *e.a.f.*
Ladies' S., Newtownards
O'Connor, B. *e.f.* St. Mary's Convent, Bruff
Reid, E. *a.* Hyde Park Road S., Mutley
²Roberts, M.
Wincham Hall Coll., Northwich
Tims, S.L. *e.a.* The College, Oswestry
²Vaughan-Williams, B.F.P.
Grosvenor Coll., Bath

Dangerfield, D. *f.*
Kent House Coll., Anerley
Day, F.A. *s.* Skinners' Co.'s S. for Girls, N.
East, D.M. Temple Square S., Aylesbury
²Fountain, C.G.
Malvern H., Lewisham Park, S.E.
Hobbs, E.A. *g.f.*
Upper St. Leonards Ladies' Coll.
Jackson, F. *s.* Rhianva Coll., Hunstanton
Kelly, E. *e.a.* Ladies' S., Newtownards
²Lyon, J. Holborn Estate Girls' S., W.C.
Manning, R.B. Private tuition
Minahan, M. *e.* St. Mary's Convent, Bruff
Noulis, E. *f.*
English High S., Pera, Constantinople
²Phillips, E.G. Gainsborough H., Worthing
²Potts, E.F. Cloth workers' Senior S., Peel
Powell, A.C. *g.* Boughrood H., Brecon
Riggall, D.K. *f.*
Leigh Bank Coll., Leamington Spa
Ryder, A.E. *a.*
Regent St. Hr.-Grade Girls' S., Plymouth
Stuttard, C.A. Sea View, St. Anne's-on-Sea
Taylor, D.A. *f.*
Ravenscourt H., Ravenscourt Pk., W.
²Tucker, D. The French Conv., Newhaven
²Tyrrell, M. *d.* S. Croydon Coll., Croydon

Behrman, P. *f.*
Townley Castle S., Ramsgate
Benzimra, A. *f.*
Townley Castle S., Ramsgate
²Bieber, G.I. University S., Rochester
Bushby, C. *e.a.* Higher-Grade S., Carlisle
Cole, H.F. *e.* Alexandra S., Youghal
Eads, M. Ebley H., E. Putney
Foster, I.M. *a.* Felix H., East Dulwich, S.E.
²Gascoigne, I.
Rutherford Coll.. Newcastle-on-Tyne
Gillham, M.B. *e.* The Coll., Goudhurst
Hammond, A.D. *f.*
Ashburnham H., Southborough
²Malpas, L.M. *d.* Private tuition
Moody, M. *f.*
Gordonville Ladies' S., Coleraine
²Morgan, H.S.
Upper St. Leonards Ladies' Coll.
Scattergood, E.
High Pavement Hr. Elem.S., Nottingham
Slee, M.E. *e.f.*
15 Vyvyan Terrace, Clifton, Bristol
Sprigings, E. *g.* Gavine House S., Portsm'th

Egleton, A. *e.a.* Ebley H., E. Putney
Furber, T.W. *s.g.*
Clovelly, Cliftonville, Margate
Guinane, E. St. Mary's Convent, Bruff
Jackson, M. Rhianva Coll., Hunstanton
Pain, D.A. *e.* The Oaks, Harrow
Watts, M.A.
Harborne Ladies' Coll., nr. Birmingham

²Armour, F.G. Comm. S., Ripley
Gaisford, O.
The Convent, The Avenue, Southampton
²Gater, L.G. University S., Rochester
Holton, D.A. *f.* Lancelyn H., Kew Gardens
Kerry, P.C.C. Skinners' Co.'s S. for Girls, N.
Leaming, A.W. *g.a.*
People's College Girls' S., Nottingham
Smith, W.M. *e.* Girls' High S., Aylesbury
²Swan, E.A. Geneva H., Brondesbury, N.W.
Tate, L. *g.* Oakwood H., Brighton
²Tobin, M.
P.-T. Coll., Everton Valley, Liverpool

Anderton, M. *g.a.*
Hopton Congregational S., Mirfield
Armitage, A.V.
Girls' S., Mechanics' Inst., Pudsey
Ashby, J.E. Llanberis, Ealing
²Bestick, M.V. Rathgar S., Dublin
Burton, M. Skinners' Co.'s S. for Girls, N.
Freeman, W.M.E. Grosvenor Coll., Bath
Hamilton, M.A.
Bow Modern S., Bow Rd., E.
²Harrison, M.E. Clydesdale S., Stockport
Hiscox, E. *a.f.*
Goodrich Rd. S., E. Dulwich, S.E.
²Hornby, D. Kensington H., York
Hoskins, G. Beechcroft, New Eltham
²Kiley, E.M.
Central Foundation Girls' S., Spital Sq., E.
²Mackenzie, E.M. *d.*
Arundell H., Highbury New Park, N.
Payne, D.E.M. *e.g.* Grosvenor S., Exeter
Perkins, I.A. *a.* Boughrood H., Brecon
Steel, F.E. *g.*
Hopton Congregational S., Mirfield
Williams, A.J. *e.a.*
Advanced Elem. Girls' S., Merthyr Tydfil

²Alchin, M.H.
Ashburnham H., Southborough
²Bridger, M.A. Comm. S., Ripley
²Broomfield, A. Higher-Grade S., Carlisle
²Cockerell, E.
St. Stephen's Coll., Hounslow
Edmunds, G. *g.* St. Margaret's S., Cardiff
Erlam, E.A. *f.* Park H., Hale, Altrincham
Gaunt, D.V. Osborne H., Redditch
Grieve, W.M. *e.*
Skinners' Co.'s S. for Girls, N.
²Harvey, E. *f.*
St. Ursula's S., Westbury-on-Trym
Hellins, I. *e.f.* Rathgar S., Dublin
Hodgkinson, M. *a.*
Milton Lodge S., Fleetwood
Lunt, M. *e.* Plas Madoc, Ruabon
Macaulay, E.A. *f.* Victoria Coll., Belfast
²Mitchell, M. Comm. S., Ripley
Moore, D.E. Private tuition
Parrott, D.M *e.*
Ballina House High S., Brixton Hill, S.W.
Robb, K.F. *f.* Private tuition
²Seddall, R.L.
The Convent, The Avenue, Southampton
²Slinger, M.A.
Mundella Higher Elem. S., Nottingham
²Young, M.M.
Keble Memorial Girls' S., Harlesden

Appleby, I. *g.a.*
St. Mary's Convent, Middlesbrough
Bevern, G.M.
Upper St. Leonards Ladies' Coll.
Chapman, K.V. *d.*
Hyde H., Tollington Park, N.
²Connell, G.H. Victoria Coll., Belfast
²Durant, N.
Notre Dame Conv. S., Plumstead
Godfrey, I.F.
St. Margaret's S., Streatham Common
²Gottheiner, E. Trinity Coll., Tulse Hill
Hatch, M.E. Hyde H., Tollington Park, N.
Hayes, D.
High Pavement Hr. Elem.S., Nottingham
²Hodgkinson, F.M.
Higher-Grade S., Carlisle
Jones, I.E. Hythe S. for Girls
Kidd, E.L. Wincham Hall Coll., Northwich
Leach, J. *a.* Hyde Park Road S., Mutley
Peach, C.M.
Leigh Bank Coll., Leamington Spa
²Service, C.E.
Central Foundation Girls' S., Spital Sq., E.
Tickell, E. *a.*
Secondary Day S., Regent St., Plymouth
Veness, E.M. Rye Coll. S.

Baron, H.
Girls' S., Promenade, South Shore, B'pool
Bullivant, D. *e.* The Limes, Solihull
Denner, F.B. *e.a.*
Advanced Elem. Girls' S., Merthyr Tydfil
Godden, M.V. *e.*
Advanced Elem. Girls' S., Merthyr Tydfil
²Goldstein, E.
Central Foundation Girls' S., Spital Sq., E.
Griffin, I. *f.*
St. Ursula's S., Westbury-on-Trym
Harvey, R. *e.* The Coll., Goudhurst
Holliday, C. *s.a.* Higher-Grade S., Carlisle
Karabeyoglou, P. *f.*
English High S., Pera, Constantinople
Keith-Pusey, C. *h.*
Manor H., Brixton Hill, S.W.
Long, C.R.
Carden S. for Girls, Peckham Rye, S.E.
Marshall, H. *al.*
High Pavement Hr. Elem.S., Nottingham
Miller, D. Elm View, New Eltham
²Moore, E.M.
The Convent, The Avenue, Southampton
Rogers, H.R. *a.*
Strafford Abbey Coll., Stroud
Seabrooke, W.E.
The Limes, Buckhurst Hill, Essex
Walker, D. *e.* Wintersdorf, Birkdale
²Williams, E.M. Gram. S., Pencader
Winterbottom, D. *e.f.*
Girls' S., Promenade, South Shore, B'pool

Bennett, D.A. *e.*
Geneva H., Brondesbury, N.W.
²Brown, W.
Central Foundation Girls' S., Spital Sq., E.
Chaplin, E. *f.* Oakwood H., Brighton
Combridge, M.G. 20 York Villas, Brighton
Davies, J. *e.*
Advanced Elem. Girls' S., Merthyr Tydfil
Denning, J.M.V. *f.* Private tuition
Laver, E.E. Kempstow H., Malvern Link
²Morritt, S. Wellington H., Blyth
²O'Grady, B.
P.-T. Coll., Everton Valley, Liverpool
Paine, M. Temple Square S., Aylesbury
²Reed, J.
The Convent, The Avenue, Southampton
Robb, E.B.B. *f.* Private tuition

²Burrows, L. Eton H., Cheltenham
Campbell, H. Oakwood H., Brighton
Carter, J.W. Lynton H., Portsmouth
²Cowper, E.M.
Wincham Hall Coll., Northwich
Creer, D.J. Douglas Secondary S.
Fox, S. *g.d.*
St. Mary's Convent, Middlesbrough
Gatley, A. *s.e.a.* Linwood S., Altrincham
Hamilton, D. *f.* Park H., Hale, Altrincham
Harden, M.W. High S. for Girls, Tavistock
Kauffman, F. *f.* Townley Castle S., Ramsgate
LeBas, E.M. Glebe Place S., Clissold Park, N.
Leete, A.I. Breakspear Coll., Brockley, S.E.
Lord, D. County S., Tenby
Moore, E.M. *e.f.* Private tuition
Stannard, E. Rhyl County S.
Swift, D. Gainsborough H., Worthing
Taggart, M. Victoria Coll., Belfast
Williams, A.K. *e.*
Advanced Elem. Girls' S., Merthyr Tydfil
Wray, G. *g.*
St. Mary's Convent, Middlesbrough

Bevington, D.G. Plas Madoc, Ruabon
Challice, P.M. *e.f.*
Gainsborough H., Worthing
²Clare, E. Manor H., Brixton Hill, S.W.
Dowdell, A.M.
Chelston Ladies' Coll., Cockington
Geere, I.M. *f.* Oakwood H., Brighton
Higham, C.M. *a.*
Clarendon Coll., Tufnell Pk., N.
Hughes, M.M. *a.* Linwood S., Altrincham
Lawlor, M.H.
Millbank S., Holywood, Co. Down
Short, M.A. The Coll., Goudhurst
²Tytgat, C. *f.* Private tuition
Vosper, C. Kilmar Coll., Liskeard
Welford, N. *e.a.*
St. Mary's Convent, Middlesbrough
²White, M.
Keble Memorial Girls' S., Harlesden
Wood, E. *a.* Alexandra Coll., Hastings

Bailey, S.B. *a.*
People's College Girls' S., Nottingham
²Bird, A.E. Queen's S., Chester
²Bush, G. Boldrewood, Redhill
²Cadogan, M.K.
Ecole Normale de Notre Dame, Namur
Dunwell, E.M. *e.d.*
Anby House Coll., West Hackney, N.E.
Evans, D.M.
Carden S. for Girls, Peckham Rye, S.E.
Howson, E.A. *e.f.*
Skinners' Co.'s S. for Girls, N.
Marsh, R.E.
Clovelly, Cliftonville, Margate
Stenning, G.E. *e.* Hainault H., Ilford
Stephens, F.F. High S. for Girls, Tavistock
Stewart, M.G. Private tuition
²Wallace, M.B. Downs S., Walmer

Beaumont, J. *g.*
Rougemont Coll., Blackpool
Bentham, J.B. *a.* Hill Croft S., Bentham
Clarke, G. Oakmere, Northwich
²Euan-Smith, E.V.L.M. Private tuition
Fletcher, V.A.
High Pavement Hr. Elem.S., Nottingham
Glen, M. Bradbourne Coll., Sevenoaks
Griffiths, M.E. Gram. & Coll. S., Carnarvon
Hammond, L.P. Camden Rd. Coll. S., N.
Hanns, E. Spring Hill H., Tavistock
Hyndman, L.F.
Cricklewood Coll. for Girls, N.W.
Jeffrey, H. *a.* Higher-Grade S., Carlisle
Meardi, F. *sp.*
The Convent, Highgate Rd., N.W.
Moran, L.E.H. *f.* Victoria Coll., Belfast
²Murch, B.N.A. High S., Waltham Cross
Nicholson, E.M. Fulford Field H., York
Scott, E.B. *f.*
31-33 Brigstock Rd., Thornton Heath
Stellmann, A. *f.*
Anby House Coll., West Hackney, N.E.
²Stillings, A.
Girls' S., Mechanics' Inst., Pudsey
²Tilbury, E.A. The Magnolias, Southsea
Williams, C.L. Skinners' Co.'s S. for Girls, N.

²Allaway, E.R.
St. Saviour's Middle Class S., Camberwell
Brewer, F.E. *d.*
Wincham Hall Coll., Northwich
Carder, H.M. *a.* Walford Coll., Tipton
²Cleary, M.E.
The Convent, The Avenue, Southampton
Comley, K. *e.* Stoneleigh Coll., Porthcawl
Evans, E. *e.*
Advanced Elem. Girls' S., Merthyr Tydfil
Foley, M. *f.*
St. Ursula's S., Westbury-on-Trym
Goodlass, E.M. Cranley H., Muswell Hill, N.
Horner, M.J. Camden Rd. Coll. S., N.
Kaye, B. Fartown Gram. S., Huddersfield
²Lawrence, L.E.
Battersea Polytechnic Science S., S.W.
Lomas, O.A.
Wincham Hall Coll., Northwich
²Marshall, B.N.
Central Foundation Girls' S., Spital Sq., E.
Messenger, E. Higher-Grade S., Carlisle
Moore, M.S. Victoria Coll., Belfast
Wells, F. Clarendon Coll., Tufnell Pk., N.

²Anderson, D.E. The Coll., Goudhurst
²Browne, A.
P.-T. Coll., Everton Valley, L'pool
Caithness, H. *f.* Llanberis, Ealing
Darby, D.M. Clarendon Coll., Tufnell Pk., N.
Davies, E.M. Plas Madoc, Ruabon
Gardner, C.B. *s.* Comm. S., Ripley
²Keith, M.E.
Rutherford Coll., Newcastle-on-Tyne
Langton, L.U.H. 97 Grosvenor Rd., S.W.
Lassetter, G.M.
Alwyne Coll., Canonbury, N.
Meade, D Private tuition

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GIRLS, 3RD CLASS, PASS—*Continued.*

Ridge, L.M. Portsea Coll. S.
Smallwood, D.P.
Kempstow H., Malvern Link
[2]Spencer, M.
Girls' S., Mechanics' Inst., Pudsey
Staniforth, E.M. *a.d.*
High Pavement Hr. Elem. S., Nottingham
Bradshaw, F.E. The College, Oswestry
[2]Bushell, F.
Conv. of Mercy, Clifford, Boston Spa
Clowser, M.
Holmwood H., Hampstead, N.W.
[2]Collister, E.A.
Clothworkers' Senior S., Peel
Cox, B. Breakspear Coll., Brockley, S.E.
Diggle, E.A. Wintersdorf, Birkdale
Haine, H.M. Hyde Park Road S., Mutley
Hartnup, P.
Ashburnham H., Southborough
Jenkins, N.I. *e.*
Advanced Elem. Girls' S., Merthyr Tydfil
Jopson, E.M.
Carden S. for Girls, Peckham Rye, S.E.
Knox, M. Douglas Secondary S.
O'Brien, M. St. Mary's Convent, Bruff
Pell, A.N. *e.* The Oaks, Harrow
Phillips, E.W. *d.*
Gainsborough H., Worthing
[2]Sheehan, K. St. Mary's Convent, Bruff
Tillson, M.H. *a.*
Ashley High S., Long Sutton
Tyrrell, A.M.
People's College Girls' S., Nottingham

Bayliss, M. Rhyl County S.
Bornet, C.
The Convent, The Avenue, Southampton
Boyd, M. Ladies' S., Newtownards
Davy, G.H.M.
Chelston Ladies' Coll., Cockington
Dooley, K. St. Mary's Convent, Bruff
Doubleday, L.V. The Coll., Goudhurst
Dwane, H.M.
St. Ursula's S., Westbury-on-Trym
Easum, M.I. Milton Coll., Chingford
Garrick, L. 7 Grange Crescent, Sunderland
Greenwood, F.B.
Hyde H., Tollington Park, N.
Hickson, G.M. Hill Croft S., Bentham
Illingworth, F.W. *g.*
Hopton Congregational S., Mirfield
[2]Ingamells, M.A.
Central Classes, Long Sutton
McKenzie, F.E. Church Home S., Dublin
Moffat, E. Lime Tree H., York
Niblock, M. Ladies' S., Newtownards
Scott, J.R. *f.*
Clare Lodge S., Newcastle, Co. Down
Stokes, D. Wirral S., Heswall-on-Dee
Thomas, S.M.
Advanced Elem. Girls' S., Merthyr Tydfil

Ashby, B.M.
Hyde H., Tollington Park, N.
Bates, E.A. *a.*
High Pavement Hr. Elem. S., Nottingham
Chapman, E.F.
Carden S. for Girls, Peckham Rye, S.E.
Gamble, F.W.
Upper St. Leonards Ladies' Coll.
[2]Giles, E.F. Camden Rd. Coll. S., N.
Jones, E.V.
Carden S. for Girls, Peckham Rye, S.E.
Lowing, H.R.M.
St. Marylebone Higher-Grade S., W.
Roberts, J.M. Douglas Secondary S.
Shorter, K. Highwood H. Girls' S., Liskeard
Singleton, M.
Girls' S., Promenade, South Shore, B'pool
Stephenson, M.
St. Hilda's, Hexham-on-Tyne
Wiggins, M.A. Kent House Coll., Anerley
Williams, G.M. Rhyl County S.

Chapman, A. Private tuition
[2]Clarke, H.R. Victoria Coll., Belfast
Dawe, G. Kilmar Coll., Liskeard
Dick, E.
The Convent, The Avenue, Southampton
[2]Elliott, J.V.
Keble Memorial Girls' S., Harlesden
Harrison, F.C. Clydesdale S., Stockport
Heane, E.C. Private tuition
[2]James, D.
St. Etheldreda's High S., Thavies Inn, E.C.
Johnston, L. *f.* Girls' Coll. S., Belfast
Jones, J. Private tuition
[2]Myerscough, M.
Pupil-Teachers' Coll., Blackburn
Pye, M.L. Glebe Place S., Clissold Park, N.
Richardson, I.M.
Sea View, St. Anne's-on-Sea
Rundle, F. High S. for Girls, Tavistock
[2]Searle, E.M. Sunderland H., Hove

Benda, F.E. Glebe Place S., Clissold Park, N.
Culley, H.G. Bow Modern S., Bow Rd., E.
Field, G.F.
The Limes, Buckhurst Hill, Essex
Fisher, W.F. S. Kilda's Coll., Bristol
[2]Lane, R.
Anglo-French Private S., East Ham
[2]Rea, A. Knock Intermediate S., Belfast
[2]Silvester, W.A.
St. Saviour's Middle Class S., Camberwell
Turner, D.G.
Derwent House High S., Whalley Range
Wall, O.M. Grosvenor Coll., Bath

Bassett, E.M.
Highwood H. Girls' S., Liskeard
Dickery, E.F.
Cricklewood Coll. for Girls, N.W.
[2]Fowler, C.E. County S., Pontypridd
Horrocks, E. Barrfield S., Pendleton
MacMahon, N.
The Convent, The Avenue, Southampton
Sherrard, M. Girls' Coll. S., Belfast
[2]Tweddle, E. Girls' High S., Aylesbury

Bate, M.K. Newland High S., Heaton Moor
Kennedy, M. St. Mary's Convent, Bruff
Lander, D. *f.*
English High S., Pera, Constantinople
Lehmkuhl, A.L. *e.f.*
Forest Gate High S. & Comm. Coll.
Macbeth, E.H. Ladies' S., Newtownards
Noirit, J.E. Teddesley H., Walsall
Tonkin, J. Aintree High S., Liverpool
Ward, L.E. The Coll., Goudhurst

Aspinall, J. High S. for Girls, Longsight
Barclay, L.S. *e.* Girls' Grammar S., Settle
Barritt, O.M. West Hill H., Maldon
Black, E. *a.*
Mall Rd. Middle-Class S., Hammersmith
[2]Butland, G.O.
Chelston Ladies' Coll., Cockington
Cole, E. High S. for Girls, Tavistock
Cressall, E. Elm View, New Eltham
[2]Edington, I.N. Camden Rd. Coll. S., N.
Fletcher, E.E. *a.*
Central Classes, Long Sutton
Holland, E.
Regent St. Hr.-Grade Girls' S., Plymouth
Hudson, G.E. *d.*
Cricklewood Coll. for Girls, N.W.
Mansfield, D. Friends' S., Mountmellick
Miller, E. St. Stephen's Coll., Hounslow
Moore, E.
Mall Rd. Middle Class S., Hammersmith
Pigg, A. St. Hilda's, Hexham-on-Tyne
Roe, E.I. Clarendon H., Reigate
Saunders, E. Brent Hill H., Ealing
[2]Setchell, E.M.
Central Foundation Girls' S., Spital Sq., E.
Shaul, L. *f.*
Ch. of Scot. S., Hasskein, Constantinople
Smith, C.A. *f.* Boonara, Twickenham
Smith, D.E.L.
Chelston Ladies' Coll., Cockington
Taylor, M.E.
Ashburnham H., Southborough
Tucker, M. *a.*
Secondary Day S., Regent St., Plymouth
Westgate, M.H. Highfield, Wallington

Brown, E.H. West Hill H., Maldon
Crowe, B. St. Mary's Convent, Bruff
Ennis, M. *e.*
St. Francis de Sales' S., Walton, L'pool
Frampton, E.M.
Gainsborough H., Worthing
Jarvis, M. Hyde Park Road S., Mutley
Leader, D. *f.* Brentford Coll. S.
Oldham, E.E. *f.* Prestwich High S.
Stansfield, D.A. Comm. S., Ripley
Thurlow, L.E. Denmark Coll., Wimbledon
[2]Topping, D.
The Convent, The Avenue, Southampton
Tweddle, C. Girls' High S., Aylesbury
Wardle, L.S.
Newland High S., Heaton Moor
Wederell, V.J.
The Limes, Buckhurst Hill, Essex

Bill, E. Princess Gardens S., Belfast
Bruce, M.M. The Coll., Goudhurst
Frost, M.
High Pavement Hr. Elem. S., Nottingham
Gittoes, V.S. Boughrood H., Brecon
Hunt, O.M. Spring Hill H., Tavistock
[2]Jennings, A.
Brunt's Technical S., Mansfield
Jones, J. Private tuition
Kenward, A.M. Hyde Park Road S., Mutley
Little, R. *a.* Higher-Grade S., Carlisle
Mallinson, H.
Hopton Congregational S., Mirfield
Osborne, E. 2 Seafield Terrace, Gosport

Brown, F.H. Milton Lodge S., Fleetwood
[2]Clayton, V. Blagdon, Eastbourne
Frost, C.D.
Carden S. for Girls, Peckham Rye, S.E.
Gouldstone, F.E. *e.*
Dudley H., Cazenove Rd., N.
Haylock, D.E.
People's College Girls' S., Nottingham
Mallock, B. *e.a.* High S., Kirkby Stephen
Maunder, C.E. Belmont S., S. Tottenham
McDonnell, T. St. Mary's Convent, Bruff
Nicholson, E.M. The College, Oswestry
Noel, C. *f.* Stoneleigh Coll., Portcawl
[2]Perkin, M. High S. for Girls, Tavistock
Quinlan, B. *a.* St. Mary's Convent, Bruff
Taylor, E.
Hopton Congregational S., Mirfield

Brewer, E.F. Haslemere, Clapham Park
Carroll, K. *a.* St. Mary's Convent, Bruff
Fursdon, E. *g.* Brent Hill H., Ealing
Heaney, R. *e.*
St. Francis de Sales' S., Walton, L'pool
Kennedy, A. St. Mary's Convent, Bruff
Langston, K. Brent Hill H., Ealing
Owen, G. *e.* Rhyl County S.
Pritchard, F.M.
31–33 Brigstock Road, Thornton Heath
[2]Richer, M. Private tuition
Sewell, G.M.
Ballina House High S., Brixton Hill, S.W.
Sharpe, L.M. Beaconsfield S., Twickenham
Volkes, R.A. Stafford Coll., Forest Hill
[2]Williams, E.V. Gram. S., Pencader

Bowmer, M.G. *a.*
People's College Girls' S., Nottingham
Gooch, N. Lime Tree H., York
[2]Greenland, E. 6 Lawn Villas, Herne Bay
Hunter, E.A. St. Hilda's, Hexham-on-Tyne
Johnson, H. The Coll., Goudhurst
Kenworthy, C. The Coll., Goudhurst
Munn, N. St. Ursula's, Westbury-on-Trym
[2]Oliver, E. Girls' Coll. S., Larne
Richardson, D.V. The Coll., Goudhurst
Ridley, M. St. Hilda's, Hexham-on-Tyne
Smale, M. Hyde Park Rd. S., Mutley
Whitfield, G.
Regent St. Hr.-Grade Girls' S., Plymouth
Williams, B. The College, Oswestry

Adams, M.H. Ulster Provincial S., Lisburn
[2]Bennett, W.
St. John the Baptist S., Brighton
Brilliant, R.
Glebe Place S., Clissold Park, N.
Culley, A.E. Bow Modern S., Bow Rd., E.
Gratwicke, F.M.
Ballina House High S., Brixton Hill, S.W.
[2]Gray, H. The Southend S., Winchester
Hardstaff, D.M.
Sea View, St. Anne's-on-Sea
Hewson, V.G. Teddesley H., Walsall
Langdon, G.V. Milton Coll., Chingford
[2]Robbins, A.M.
Raine's Foundation S., Cannon St. Rd., E.
Shea, M.M. Private tuition
Winter, E.B. Highfield, Wallington

Armour, E.M. Comm. S., Ripley
Cox, S. Glenfern H., Burnham, Som.
Davidson, E.G. Denmark Coll., Wimbledon
Dowdell, F. Central Classes, Long Sutton
Ford, E.H. Evelyn H., Upper Holloway
Highley, A. University S., Rochester
Potter, K.E.C.
Millburn H., Honor Oak Park, S.E.
[2]Rattenbury, E.K.
Keble Memorial Girls' S., Harlesden
Richardson, A.P. Boughrood H., Brecon
Riddoch, H.I.
Stratford Abbey Coll., Stroud
Smith, W.F. *a.*
4 Trinity Terrace, Cheltenham
Wallbridge, E.
South Croydon Coll., Croydon

Allcock, E.H.
Wincham Hall Coll., Northwich
Bell, H. *e.* Sydenham H., Whitley Bay
[2]Bingham, A.G.M.
Secondary S., Whitchurch, Hants
Chenery, B. Entry H., Diss
[2]Habgood, E. Marist Conv., Tottenham, N.
Lidbetter, R.M. Camden Rd. Coll. S., N.
Mitchell, E.M. *e.* The Coll., Goudhurst
Salter, A.K. Grosvenor S., Exeter
Solomon, E. *f.*
Dames de l'Instruction Chrétienne, Ghent
Watson, E. Brent Hill H., Ealing
Whittle, M.E. Beaconsfield S., Twickenham

Burg, K.M. St. Mary's S., Broadstairs
Diamondstein, B. *d.*
Anby House Coll., West Hackney, N.E.
French, E.M. Church Home S., Dublin
[2]Higgins, M. Private tuition
Riley, E. Wintersdorf, Birkdale
Sewell, V.
The Convent, The Avenue, Southampton
Williams, M.L., Southoe H., Richmond

Ballisat, A. Hyde Park Road S., Mutley
[2]Bower, E.
Central Foundation Girls' S., Spital Sq., E.
Menhinick, M. The Coll., Goudhurst
Moore, R. 3 Teme St., Tenbury
Pye, E.L. Glebe Place S., Clissold Park, N.
Snell, E. *s.* Kilmar Coll., Liskeard

Channon, L.M. High S. for Girls, Tavistock
Collins, E.E. The Coll., Goudhurst
Couch, M. Highwood H. Girls' S., Liskeard
Palmer, F. Sherwood S., Woolwich
Skeffington, A.M.
Ecole Normale de Notre Dame, Namur

Ambrose, C. St. Mary's S., Broadstairs
Barradell, D.A. The Coll., Goudhurst
Brook, F.
Hopton Congregational S., Mirfield
Keay, K.S. Grosvenor Coll., Bath
Kelly, E.M. *s.* Kilmar Coll., Liskeard
Spencer, E.M. Camden Rd. Coll. S., N.
Stubbs, M. Gram. S., East Finchley

Davis, E.A.
High S. for Girls, Stockwell Rd., S.W.
Heywood, A. The Rectory, Failsworth
Newsome, M.
Hopton Congregational S., Mirfield
Osborne, J.
Ballina House High S., Brixton Hill, S.W.
Quine, A.A. Barrfield S., Pendleton
Ramsay, I.J.M. Ridgmont S., Bristol

Blantern, G. Plas Madoc, Ruabon
Broad, M.M. Southoe H., Richmond
Dobbs, E. Duke Street S., Bath
Ginger, M.C.
Geneva H., Brondesbury, N.W.
Goldney, G.L.M.
Glebe Place S., Clissold Park, N.
Goodman, A.E. Comm. S., Ripley
Sellick, E.B. High S. for Girls, Tavistock
Wotton, F.M. Pearcloses., Holcombe Rogus

Bigg, E.M. High S., Waltham Cross
Constantine, V.J.
Aintree High S., Liverpool
Hodgkinson, M.W.
South Croydon Coll., Croydon
Maudling, I.G. Lancelyn H., Kew Gardens
Williams, E.E. Southoe H., Richmond
Zalasinski, M.
Peoples' College Girls' S., Nottingham

Bully, A.
St. Etheldreda's High S., Thavies Inn, E.C.
Ells, D. 2 Seafield Terrace, Gosport
Evans, S.L.
Kempstow H., Malvern Link
Frayn, F.E. Spring Hill H., Tavistock
Freeborn, G. Thornton Girls' S., Grays
Robinson, G.W.
Dudley H., Cazenove Rd., N.

Bascombe, D.M. Duke Street S., Bath
Burnup, L. Sydenham H., Whitley Bay
Grace, G. *f.* Stoneleigh Coll., Portcawl
Meaney, M. St. Mary's Convent, Bruff
Oakley, L. Highfield Coll., Blackpool
Preston, E.E. Comm. S., Ripley
Ryall, E.A. High S. for Girls, Tavistock
Sinton, E.E. Ulster Provincial S., Lisburn
Thomson, E.
Wincham Hall Coll., Northwich

Caunter, L.L. Pengover, Saltash
Forster, E. Ashburnham H., Southborough
Hart, E.
St. Etheldreda's High S., Thavies Inn, E.C.
Joyce, M. Ulster Provincial S., Lisburn
Norman, R. County S., Tenby
[2]Plowman, E.E.
Kempstow H., Malvern Link
Walklett, E.L. Southoe H., Richmond

Crosse, R. Boonara, Twickenham
[2]Eason, F.F. Brunt's Technical S., Mansfield
Goodman, E.
Glebe Place S., Clissold Park, N.
Green, V.
St. Etheldreda's High S., Thavies Inn, E.C.
Hackett, B. St. Mary's S., Broadstairs
Hole, E.H.
Chelston Ladies' Coll., Cockington
King, L. Newton H., Tunbridge Wells
Perkin, F.M. High S. for Girls, Tavistock
Richards, P.M.
Westbourne S., Westbourne Pk., W.

[2]Morgan, D.A.
High S. for Girls, Stockwell Rd., S.W.
[2]Squire, K.M. High S. for Girls, Tavistock

Creagh, M. Dinton Lodge, Hanwell
Davies, N. High S. for Girls, Lampeter

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LOWER FORMS EXAMINATION.—PASS LIST, MIDSUMMER, 1904.

BOYS.

Addison, J.H. Horsmonden S., Kent
Allen, D.W. The Coll., Weston-super-Mare
Allen, G. Margate College
Alliston, A.W. Maldon Gram. S.
Amos, T. Commercial S., Stretford
Anderson, L.S. Endcliffe Coll., Ranmoor, Sheffield
Archer, C.J. St. Philip's Gram. S., Edgbaston
Armstrong, T.A. Battle Hill S., Hexham
Armstrong, W.K. Montauban, St. Anne's-on-Sea
Austin, F. Margate College
Austin, J.J. Margate College
Avery, J.R. Forest Gate High S. & Comm. Coll.
Ayliffe, K.W. Comm. S., Ripley
Bagshaw, A.S. Eastward Ho! Coll., Felixstowe
Baker, F. Brent Hill S., Hanwell
Baker, L.F. St. George's Coll, Weybridge
Baker, S.A. Kent House Coll, Anerley
Baker, W. The Coll., Goudhurst
Ball, R.H. The Coll, Weston-super-Mare
Baly, H.C. Modern High S., Seven Kings
Banks, W.E.H. Frobisher Terrace S., Falmouth
Barford, T.V. Uckfield Gram. S.
Barnes, A.I. Christian Brothers' Coll., Gibraltar
Barnes, D. Gram. S., Streatham
Barry, C.A. Margate College
Bartholomew, J. Eastward Ho! Coll., Felixstowe
Bean, G. Uckfield Gram. S.
Belsham, V. Bethany H., Goudhurst
Benians, S.A.W. Margate College
Besche, C. St. Aloysius' S., Hornsey Lane, N.
Bessant, R.J. Comm. S., Ripley
Best, C.W. The Modern S., East Grinstead
Bishop, H.S. The Coll., Weston-super-Mare
Blake, J.A.J. Eye Gram. S.
Blowey, F. Tavistock Gram. S.
Bolton, J. Newlands S., Hoylake
Booth, S.S. Endcliffe Coll., Ranmoor, Sheffield
Borlase, J. Sir Wm. Borlase's S., Marlow
Bradley, R. Bailey S., Durham
Bree, C.J. St. Aloysius' S., Hornsey Lane, N.
Briscoe, A. Townley Castle S., Ramsgate
Broad, H.T. West Cliff Coll., Ramsgate
Broadbent, A. Salesian S., Battersea, S.W.
Broady, A. Osborne High S., West Hartlepool
Brown, E. Hutton Gram. S.
Brown, F. St. John's Coll., Brixton
Brown, F.W. Xaverian S., Mayfield
Brown, W.J. Rye Gram. S.
Bruce, J.R. Clifton H., Aintree
Brundrett, F. Wilmslow Gram. S.
Buchanan, F.C. Eastward Ho! Coll., Felixstowe
Buckell, H. Sir Wm. Borlase's S., Marlow
Burniston, H.M. Hurst Leigh, Southampton
Burrell, C. Private tuition
Burton, A.H.W. Wirksworth Gram. S.
Burton, C.E.B. Westcliffe S., Norbreck, nr. Blackpool
Bush, D. Hutton Gram. S.
Bush, M.H. Bethany H., Goudhurst
Butler, R.A. High S. for Boys, Egham
Calvert, J.P. Commercial S., Horsforth, Leeds
Cameron, N.R. St. Deiniol's S., Upper Bangor
Campion, R.L. St. Aloysius' S., Hornsey Lane, N.
Canilla, F. Christian Brothers' Coll., Gibraltar
Cant, C. Northgate S., Ipswich
Cardona, J.M. Christian Brothers' Coll., Gibraltar
Carse, W.K.T. St. Asaph County S.
Carter, H.G. Oswestry School
Catherwood, A.G. Uckfield Gram. S.
Cavadino, A.J. Xaverian S., Mayfield
Cavadino, E.G. Xaverian S., Mayfield
Chalk, P.E. Taunton's Trade S., Southampton
Chapman, A.H. Comm. S., Ripley
Charig, A. Hythe School
Clark, G. Osborne High S., West Hartlepool
Clark, H.L Kent House Coll., Anerley
Clark, J.A. Margate College
Clark, J.D. Battle Hill S., Hexham
Clark, T. Rye Gram. S.
Clarke, A. Hutton Gram. S.
Clarke, A.B. New Coll., Harpenden
Clarke, R.H. St. Asaph County S.
Clemens, C.R.H. Wadham S., Liskeard
Clements, J.B. Xaverian S., Mayfield
Clifford, E. Margate College
Cobb, L.L. York H., Folkestone
Cobb, R.W.B. Margate College
Colbourne, C. Margate College
Colley, E.V. Bethany H., Goudhurst
Conway, W.G.D. The Coll., Weston-s.-Mare
Cooke, H.F. Forest Gate High S. & Comm. Coll.
Coombs, F.L. St. John's Coll., Southend-on-Sea
Cooper, P.O. Lindisfarne Coll., Westcliff-on-Sea
Copland, R.W. Christian Brothers' Coll., Gibraltar
Corbridge, G.A. Xaverian S., Mayfield
Corey, O.B. Bethany H., Goudhurst
Corey, V.B. Bethany H., Goudhurst
Couch, H.J. Bible Christian Coll., Shebbear
Counter, A.W.F. Beverley S., Barnes
Courcier, R. Stafford Coll., Forest Hill
Cox, G.T. Taunton's Trade S., Southampton
Crick, J.N. Anby House Coll., Hackney, N.E.
Crisp, S.J. Eye Gram. S.
Crowhurst, K.J. Leigh Hall Coll., Leigh-on-Sea
Croxon A.B. Maldon Gram. S.
Cutler, E.R. Culham College S., Abingdon
Dangerfield, W.D. Kent House Coll., Anerley
Davis, C.J.B. Grove H., Highgate
Davis, F.W. Eastward Ho! Coll., Felixstowe
Dawson, R. Bethany H., Goudhurst
Day, A.A. Hillmartin Coll., Camden Rd., N.W.
Day, G. University S., Rochester
Day, H.R.D. Taplow Gram. S.
Deacock, A.V. Grove H., Highgate
Dean, J.F. Margate College
Delahunty, M. Catholic Coll. Institute, Manchester
Denham, A.M. Westcliffe S., Norbreck, nr. Blackpool
Denny, A.W. Comm. S., Ripley
De Saulles, N. Gram. S., Streatham
Diaper, V. Taunton's Trade S., Southampton
Dixon, F. Battle Hill S., Hexham
Dodd, E.E. Bethany H., Goudhurst
Dodd, L.E. Tavistock Gram. S.
Dodge, W.R. Wilmslow Gram. S.
Doherty, B.J. St. George's Coll., Weybridge
Dommett, H.H. Taplow Gram. S.
Dotto, J.M. Christian Brothers' Coll., Gibraltar
Drinkwater, J.H. St. Philip's Gram. S. Edgbaston
Drysdale, A. Gram. S., Streatham
Duvall, H.J. Uckfield Gram. S.
Dyball, J.H. Kent House Coll., Anerley
Dysart, G. Xaverian S., Mayfield
Eagar, F.H. Weston S., Bath
Eamer, E.C. Stafford Coll., Forest Hill
Easton, H.S. The Modern S., East Grinstead
Eddon, F. Dudley H., Lee, S.E.
Edingborough, N.D. Dagmar H., Hatfield
Edward, E.W. University S., Rochester
Edwards, A.C. Bethany H., Goudhurst
Edwards, A.V. Comm. S., Ripley
Edwards, E. St. John's Coll., Brixton
Edwards, W.T. St. John's Coll., Southend-on-Sea
Eggins, J. Sir James Smyth's Gram. S., Camelford
Elder, R.S. Sherwood S., Woolwich
Elliot-Langworth, K. Dudley H., Lee, S.E.
Ellis, D.L.I. Margate College
Ellis, F. Gram. S., Streatham
Ellison, D.C. Oswestry School
Ellison, S. Townley Castle S., Ramsgate
Ensum, G.A. The Collegiate S., Bowes Park, N.
Evelyn, A. Sir James Smyth's Gram. S., Camelford
Falcke, J. Holt H., Cheshunt
Farley, E. Horsmonden S., Kent
Farquharson, D.H. St. Catharine's S., Broxbourne
Fazan, B. Thanet Coll. Margate
Fender, P.G. St. George's Coll., Weybridge
Fenton, N.R. Gram. S., Blackpool
Fergusson, W.B. St. John's Coll., Brixton
Field, J.E. Hillmartin Coll., Camden Rd. N.W.
Finegold, B. Townley Castle S., Ramsgate
Fisher, S.H. St. John's Coll., Brixton
Flintan, T.M. St. George's Coll., Weybridge
Fogden, H.L.A. Lindisfarne Coll., Westcliff-on-Sea
Fokes, S.T. Bible Christian Coll., Shebbear
Foster, H. St. John's Coll., Brixton
Franghiadi, G.P. Lindisfarne Coll., Westcliff-on-Sea
Fraser, C. Salesian S., Battersea, S.W.
Freeman, A.G. Eye Gram. S.
Freeman, J. Kensey, Launceston
French, F.G. Holt H., Cheshunt
Fulcher, G.F.B. Oswestry School
Gale, A.G. Margate College
Gale, S.C. Kent House Coll., Anerley
Galsworthy, H.B. Mall Road Middle Class S., Hammersmith
Garden, J.J. Park S., Wood Green, N.
Gardner, C.I. Market Bosworth Gram. S.
Gaskin, C.M. St. Aloysius' S., Hornsey Lane, N.
Gaze, R.A. Bible Christian Coll., Shebbear
Gee, J. Salesian S., Battersea, S.W.
Gem, A. Wirksworth Gram. S.
Ghersi, A. St. Aloysius' S., Hornsey Lane, N.
Gibbings, W.C. Parkhurst Coll., Blackpool
Glancey, T. Catholic Coll. Institute, Manchester
Glanville, H. County S., Tenby
Gloster, H.W. Comm. S., Ripley
Glover-Clark, E. Bethany H., Goudhurst
Godwin, B.H. Bethany H., Goudhurst
Gomez, S. Christian Brothers' Coll., Gibraltar
Gosling, P.F. Uckfield Gram. S.
Gould, C.A. Tavistock Gram. S.
Graham, E. Clark's College S. for Boys, Holloway Rd., N.
Gray, C.W. Dagmar H., Hatfield
Green, R.O. Taunton's Trade S., Southampton
Greene, L.F.A. Grove H., Highgate
Griffiths, E.S. St. John's Coll., Brixton
Grundy, H.G. St. John's Coll., Southend-on-Sea
Guard, F.H. Romford H., Forest Gate
Guttridge, R.G. Sir Wm. Borlase's S., Marlow
Hales, H. University S., Rochester
Hall, J.F.S. University S., Rochester
Hall, R.B. St. Deiniol's S., Upper Bangor
Hancock, E.O. Endcliffe Coll., Ranmoor, Sheffield
Hare, J.R. Margate College
Harker, J.C. Xaverian S., Mayfield
Harper, E.C. Uckfield Gram. S.
Harris, G.W. Horsmonden S., Kent
Harris, W.R. Comm. S., Ripley
Heard, H. Tavistock Gram. S.
Hearn, D.E. Endcliffe Coll. Ranmoor, Sheffield
Hearn, L.W. Endcliffe Coll. Ranmoor, Sheffield
Heath, H.H. Endcliffe Coll. Ranmoor, Sheffield
Hemming, E.G. Culham College S., Abingdon
Hemus, J. Hanley Castle Gram. S.
Hickman, A.C. Stafford Coll., Forest Hill
Highton, H.V. Thanet Coll., Margate
Hillier, J.S. Hillmartin Coll., Camden Rd., N.W.
Hitchens, C. Oxford Coll., Waterloo
Hodges, R.W. St. Aloysius' S., Hornsey Lane, N.
Hodgetts, P. Hanley Castle Gram. S.
Holden, J.C. Holt H., Cheshunt
Holleyman, F.E. Comm. S., Ripley
Holmes, C.T. Bible Christian Coll., Shebbear
Hone, R.J. Clark's College S. for Boys, Holloway Rd., N.
Honey, H. Margate College
Hood, H. Taunton's Trade S., Southampton
Horn, H.G. Margate College
Horne, A. Gram. S., Streatham
Horton, H.O. St. Philip's Gram. S., Edgbaston
Howes-Roberts, F.E. St. Asaph County S.
Hoyle, H. Brent Hill S., Hanwell
Hughes, C.H. Oswestry School
Hunt, W. Margate Jewish Coll.
Hurndall, C.R. Lindisfarne Coll., Westcliff-on-Sea
Ibberson, C. Salesian S., Battersea, S.W.
Idiens, S. Hanley Castle Gram. S.
Irwin, L.H. New Coll., Harpenden
Izard, A.D. Thanet Coll., Margate
Jackson, B.A. Xaverian S., Mayfield
James, L. Tavistock Gram. S.
Jameson, L. Battle Hill S., Hexham
Jarvis, A.P. Kent House Coll., Anerley
Jeacocke, A. Horsmonden S., Kent
Jones, A.G. St. Asaph County S.
Jones, E.G. Oswestry School
Jones, J.V. St. Asaph County S.
Jones, L.O. Lindisfarne Coll., Westcliff-on-Sea
Kelly, B.J. Clifton H., Aintree
Kemp, P.G. Newlands S., Hoylake
Kendon, F.H. Bethany H., Goudhurst
Kennedy, A.J.A. Xaverian S., Mayfield
Kerr, M.D.J. Battle Hill S., Hexham
Keshan, L.P. St. George's Coll., Weybridge
Keyte, J.W. St. Philip's Gram. S., Edgbaston
Keyworth, C.D.M. Wilmslow Gram. S.
Killingsworth, T. Margate College
Kirby, A.A. Hythe School
Kirby, R. Hythe School
Knapp, P.C. Leigh Hall Coll., Leigh-on-Sea
Knapton, A. Margate College
Knight, E.H.S. Thanet Coll., Margate
Koch, N.S. Grove H., Highgate
Lacy, G.W. University S., Rochester
Laloude, L.V.P. Kingsholme S., Weston-super-Mare
Langdon, R.J.S. Bible Christian Coll., Shebbear
Langman, H.R. Tavistock Gram. S.
Langston, L. Brent Hill S., Hanwell
Lawrence, E.E. Beverley S., Barnes
Lees, F.C. St. Philip's Gram. S., Edgbaston
Leguillette, E.A. Xaverian S., Mayfield
Leman, C.M. Lindisfarne Coll., Westcliff-on-Sea
Le Riche, E.M. Park S., Wood Green, N.
Lett, W.H. Weston S., Bath
Levy, J. Christian Brothers' Coll., Gibraltar
Lewington, O.D. Taunton's Trade S., Southampton
Lewis, B.P. St. Philip's Gram. S., Edgbaston
Lewis, C.H. Oxford Coll., Waterloo
Lewis, H. Margate College
Lewis, J. Townley Castle S., Ramsgate
Lewis, L. St. Deiniol's S., Upper Bangor
Lipscombe, F.C. Lindisfarne Coll., Westcliff-on-Sea
Lipshytz, G. Gram. S., Streatham
Lloyd, E.L. St. Asaph County S.
Lloyd, G.H. Oswestry School
Loach, E.B. Margate College
Long, N.S. Stafford Coll., Forest Hill
Lord, O.J. Wadham S., Liskeard
Loseby, G. Market Bosworth Gram. S.
Lovegrove, H.G. Forest Gate High S. & Comm. Coll.
Lucas, H.J. Richmond Hill School
Lunnon, J. Sir Wm. Borlase's S., Marlow
Lupton, A.W. Kensington H., York
Lyne, R.A. Bible Christian Coll., Shebbear
Mackness, A.E. St. John's Coll., Brixton
Macnamara, D. Xaverian S., Mayfield
Macrae, H.J. Lindisfarne Coll., Westcliff-on-Sea
Madden, M. Salesian S., Battersea, S.W.
Manning, A.R. Taplow Gram. S.
Maplesden, J. University S., Rochester
Margerison, E.A. Gram. S., Werthing
Marshall, H.S. Holt H., Cheshunt
Mascord, G.A. Beverley S., Barnes
Maskell, H.P. Xaverian S., Mayfield
Massey, W.G. Wilmslow Gram. S.
Masterson, P. Xaverian S., Mayfield
Matson, O. The Modern S., East Grinstead
Matthews, G.S.M. St. Catherine's Coll., Richmond
Matthews, J. Salesian S., Battersea, S.W.
Matthews, J.J. Taplow Gram. S.
Maynard, K. Woodrough S., Moseley
Mayor, W.H. Forest Gate High S. & Comm. Coll.
McCann, R. The Convent S., Weston-super-Mare
McGuinness, H. Christian Brothers' Coll., Gibraltar
McIldowie, J.M. Killowen S., Belfast
McTague, J. Salesian S., Battersea, S.W.
Mead, E. Sir Wm. Borlase's S., Marlow
Melville, C.F. Lindisfarne Coll., Westcliff-on-Sea
Melville, E.C. Lindisfarne Coll., Westcliff-on-Sea
Merrett, J.J. Xaverian S., Mayfield
Millward, A. The Collegiate S., Bowes Park, N.
Mitchell, T. Wadham S., Liskeard
Moore, A.C. Bible Christian Coll., Shebbear
Moore, W.R. Margate College
Moorhouse, A.J. Birkdale Gram. S., Southport
Moran, T. Salesian S., Battersea, S.W.
Morris, T. St. Deiniol's S., Upper Bangor
Morrow, H. Ladies' S., Newtownards
Morrow, K. Ladies' S., Newtownards
Moseley, W. Market Bosworth Gram S.
Muller, R. The Collegiate S. Bowes Park, N.
Mullins, L.C. The Coll., Weston-super-Mare
Mumford, W.V The Coll., Weston-super-Mare

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BOYS, LOWER FORMS—*Continued.*

Munro, J. Christian Brothers' Coll., Gibraltar
Murray, A. B. Forest Gate High S. & Comm. Coll.
Murray, H. Forest Gate High S. & Comm. Coll.
Neville, W. W. Sir Wm. Borlase's S., Marlow
Newton, S. Hutton Gram. S.
Nicholas, H. P. Dagmar H., Hatfield
Nicholas, R. E. Holt H., Cheshunt
Nicholls, J. G. Penwerris Gram. S., Falmouth
Nichols, R. A. Taplow Gram. S.
Norburn, W. H. J. Eye Gram. S.
Northcote, H. P. Margate College
O'Connor, D. V. St. Asaph County S.
O'Donnell, E. J. St. George's Coll., Weybridge
O'Donovan, B. Salesian S., Battersea, S.W.
Owen, E. A. Oswestry School
Owen, G. L. Aylwin Coll., Arnside
Owen, H. M. St. Deiniol's S., Upper Bangor
Owen, R. Margate College
Pack, H. Townley Castle S., Ramsgate
Pagan, C. S. Endcliffe Coll., Ranmoor, Sheffield
Palmer, A. L. Bethany H., Goudhurst
Parker, C. N. Dagmar H., Hatfield
Parker, S. E. Taunton's Trade S., Southampton
Parrish, E. P. Margate College
Paul, R. W. St. Deiniol's S., Upper Bangor
Payne, H. G. Rye Gram. S.
Payne, P. J. The Coll., Weston-super-Mare
Payze, A. Thanet Coll., Margate
Pearce, J. Sir James Smyth's Gram. S., Camelford
Pearson, A. H. Ulster Provincial S., Lisburn
Penketh, G. Catholic Coll. Institute, Manchester
Perrier, J. Kent House Coll., Anerley
Pescodd, H. A. Taunton's Trade S., Southampton
Phillips, G. St. Deiniol's S., Upper Bangor
Phillips, H. H. Forest Gate High S. & Comm. Coll.
Phillips, T. W. Uckfield Gram. S.
Phillips, W. H. Kingsholme S., Weston-super-Mare
Pickworth, H. B. Market Bosworth Gram. S.
Pinela, G. Christian Brothers' Coll., Gibraltar
Piper, S. Bethany H., Goudhurst
Pope, L. K. Hurst Leigh, Southampton
Porter-Smith, F. Margate College
Povedano, C. R. Christian Brothers' Coll., Gibraltar
Pozzi, F. W. St. Deiniol's S., Upper Bangor
Prescott, L. Christian Brothers' Coll., Gibraltar
Preston, G. R. Comm. S., Ripley
Preston, H. O. Kent House Coll., Anerley
Prideaux, J. Osborne High S., West Hartlepool
Punt, H. Clifton H., Aintree
Pye, W. W. Thanet Coll., Margate
Quinn, E. C. St. Philip's Gram. S., Edgbaston
Ramagge, E. Christian Brothers' Coll., Gibraltar
Ramsay, W. R. K. Lindisfarne Coll., Westcliff-on-Sea
Redfern, A. R. Montauban, St. Anne's-on-the-Sea
Redman, A. Hutton Gram. S.
Reynolds, J. J. W. Margate College
Richards, F. G. The Collegiate S., Bowes Park, N.
Riches, H. W. Eye Gram. S.
Rickeard, C. G. Wadham S., Liskeard
Rickett, G. Holt H., Cheshunt
Ridley, P. Xaverian S., Mayfield
Roberts, J. O. Oswestry School
Robertson, A. L. T. Modern High S., Seven Kings
Robinson, E. Gram. S., Streatham
Rohan, L. J. Xaverian S., Mayfield
Rollason, A. G. Woodrough S., Moseley
Rolph, C. H. New Coll., Harpenden
Rolph, R. N. New Coll., Harpenden
Ronayne, J. A. Alexandra S., Youghal
Rose, P. Eye Gram. S.
Rosenthal, C. Margate Jewish Coll.
Rosenthal, L. Margate Jewish Coll.
Rossiter, O. C. St. George's Coll., Weybridge
Rowe, E. W. T. The Coll., Waterlooville
Ruggeri, F. L. Christian Brothers' Coll., Gibraltar
Russell, W. O. St. John's Coll., Southend-on-Sea
Salmon, L. F. Stafford Coll., Forest Hill
Sandford, R. M. Oswestry School
Sansom, F. W. The Collegiate S., Bowes Park, N.
Sara, A. Penwerris Gram. S., Falmouth
Schoonraad, V. J. Kent House Coll., Anerley
Schwier, W. C. New Coll., Harpenden
Scott, J. R. Grove H., Highgate
Seager, H. L. B. University S., Rochester
Sedgwick, J. Montauban, St. Anne's-on-the-Sea
Seed, R. E. Hutton Gram. S.
Seed, W. P. Hutton Gram. S.
Shanley, W. M. Xaverian S., Mayfield
Shaughnessy, G. Catholic Coll. Institute, Manchester
Shaw, J. W. Sir Wm. Borlase's S., Marlow
Sherman, T. C. Comm. S., Ripley
Shofer, B. Townley Castle S., Ramsgate
Shorrock, J. C. Hutton Gram. S.
Sibley, J. F. Xaverian S., Mayfield
Silley, H. H. Lindisfarne Coll., Westcliff-on-Sea
Simmons, N. R. Taunton's Trade S., Southampton
Simpson, C. Margate College
Sims, G. A. V. Rye Gram. S.
Smart, E. F. York H., Folkestone
Smellie, G. W. Forest Gate High S. and Comm. Coll.
Smith, E. G. The Coll., Weston-super-Mare
Smith, G. E. St. John's Coll., Brixton
Southgate, M. Gram. S., Streatham
Spain, P. C. St. George's Coll., Weybridge
Spaul, E. Xaverian S., Mayfield
Spivey, F. W. St. George's Coll., Weybridge
Stanton, C. B. Wadham S., Liskeard
Steed, R. C. Tavistock Gram. S.
Stephenson, E. Osborne High S., West Hartlepool
Stephenson, T. A. Battle Hill S., Hexham
Stewart, G. D. 17 Lorna Rd., Hove
Stewart, R. R. 17 Lorna Rd., Hove
Stone, H. Culham College S., Abingdon
Stott, S. Taunton's Trade S., Southampton
Stratton, C. O. Clark's College S. for Boys, Holloway Rd., N.
Suhr, G. Comm. S., Ripley
Sullivan, D. Xaverian S., Mayfield
Surgeson, E. Salesian S., Battersea, S.W.
Susman, J. St. John's Coll., Brixton
Swabey, F. H. Margate College
Swan, H. L. Stafford Coll., Forest Hill
Tate, H. L. H. Richmond Hill S.
Taverner, C. Rye Gram. S.
Taylor, C. R. N. Margate Coll.
Taylor, E. Sir James Smyth's Gram. S., Camelford
Taylor, J. A. Taplow Gram. S.
Taylor, T. Horsmonden S., Kent
Taylor, V. H. Hopton Congregational S., Mirfield
Tetlow, L. M. Private tuition
Thomas, D. de S. Oswestry School
Thomas, R. E. S. Stafford Coll., Forest Hill
Thompson, P. H. Hanley Castle Gram. S.
Thompson, W. G. Battle Hill S., Hexham
Thorn, A. C. Margate College
Tighe, J. H. St. Philip's Gram. S., Edgbaston
Tims, H. D. Oswestry School
Tolley, A. E. Culham College S., Abingdon
Tomkinson, P. J. St. Asaph County S.
Trestrail, A. G. Taunton's Trade S., Southampton
Tyler, C. R. A. Modern High S., Seven Kings
Unwin, F. A. Eye Gram. S.
Varrall, W. J. University S., Rochester
Veale, J. R. Tavistock Gram. S.
Vigars, H. Tavistock Gram. S.
Wale, W. A. Grove H., Highgate
Walford, A. S. Oswestry School
Walker, H. N. Osborne High S., West Hartlepool
Walker, K. M. Eye Gram. S.
Wall, S. D. Eastward Ho! Coll., Felixstowe
Wall, W. R. Margate College
Walsh, S. E. Margate College
Walters, J. S. Margate College
Warboys, S. S. Dagmar H., Hatfield
Ward, A. E. Endcliffe Coll., Ranmoor, Sheffield
Ward, F. D. Eastward Ho! Coll., Felixstowe
Ward, W. J. St. Philip's Gram. S., Edgbaston
Watkins, R. G. Eye Gram. S.
Watson, S. F. Hillmartin Coll., Camden Road, N.W.
Watt, J. J. Ulster Provincial S., Lisburn
Watt, W. Ulster Provincial S., Lisburn
Wear, W. N. Battle Hill S., Hexham
Webster, N. S. Birkdale Gram. S., Southport
Weeks, W. H. St. John's Coll., Brixton
Weight, L. G. Hythe School
Westcombe, M. Bradbourne Coll., Sevenoaks
Westlake, C. Salesian S., Battersea, S.W.
Whatham, P. Private tuition
White, A. S. St. Deiniol's S., Upper Bangor
White, C. C. Bible Christian Coll., Shebbear
White, J. S. St. George's Coll., Weybridge
White, P. B. St. Deiniol's S., Upper Bangor
Whiteside, J. H. Uckfield Gram. S.
Whitfield, P. Oswestry School
Whitgreave, J. Kensey, Launceston
Whitridge, H. S. Oswestry School
Wickens, R. N. Uckfield Gram. S.
Wiffen, A. H. T. Margate College
Wilde, F. Margate College
Wilkie, E. D. Battle Hill S., Hexham
Williams, H. C. Wadham S., Liskeard
Williams, J. H. Oswestry School
Williams, O. J. Osborne High S., West Hartlepool
Williams, W. St. Asaph County S.
Williams, W. C. Bible Christian Coll., Shebbear
Wilson, J. A. St. Deiniol's S., Upper Bangor
Wilson, L. L. Forest Gate High S. & Comm. Coll.
Wilson, W. F. P. St. Catherine's Coll., Richmond
Winter, W. Xaverian S., Mayfield
Wood, L. J. Margate College
Wood, S. Conv. of Mercy, Clifford, Boston Spa
Woodbury, C. Comm. S., Ripley
Woods, F. C. Eye Gram. S.
Wren, H. E. Stafford Coll., Forest Hill
Wright, D. D. Grove H., Highgate
Wright, E. County S., Tenby
Wyatt, W. H. Bible Christian Coll., Shebbear
Yiend, E. Elmhurst, Harrow
Zollner, A. W. Commercial S., Stretford

GIRLS.

Aagaard, M. 7 Grange Crescent, Sunderland
Abbott, H. Alexandra Coll., Hastings
Abernethy, E. Wincham Hall Coll., Northwich
Adcock, E. Dagmar H., Hatfield
Allan, F. Dewsbury H., Pocklington
Allaway, C. Conv. of the Ladies of Mary, Croydon
Allen, D. C. M. Devonshire Rd. S., Forest Hill, S.E.
Allen, P. Auby House Coll., West Hackney, N.E.
Almgill, F. St. Mary's Conv., Middlesbrough
Anderson, A. A. The Coll., Goudhurst
Anderson, G. W. Conv. of the Ladies of Mary, Croydon
Anderton, J. V. Aintree High S., Liverpool
Andrews, K. E. The Convent, The Avenue, Southampton
Ange, F. The Convent, The Avenue, Southampton
Anton, G. A. Lea Bank Coll., Leamington Spa
Ashover, D. English High S., Pera, Constantinople
Ashton, J. Newlands High S., Heaton Moor
Atkinson, F. J. Private tuition
Austin, S. W. Oxford H., Leytonstone
Auton, Q. Haldon View S., Exeter
Bailey, E. M. Highfield, Wallington
Ball, W. Rhianva Coll., Hunstanton
Banks, M. Conv. of Mercy, Clifford, Boston Spa
Barber, M. D. Moravian Girls' S., Fairfield
Barclay, K. A. Killowen S., Belfast
Barlow, F. Clough End S., Haslingden
Barnett, M. Orphanage of Mercy, Kilburn, N.W.
Barry, H. M. Queen's Park Coll., Harrow Rd., W.
Beaumont, A. G. V. Bow Modern S., Bow Rd., E.
Bebb, M. D. Royal Naval S., Twickenham
Bedford, G. E. Queen's Park Coll., Harrow Rd., W.
Beech, M. J. Plas Madoc, Ruabon
Bell, M. L. Private tuition
Bennett, M. Warwick H., Poulton-le-Fylde
Bently, H. Orphanage of Mercy, Kilburn, N.W.
Berry, F. Bradbourne Coll., Sevenoaks
Berthon, L. Orphanage of Mercy S., Kilburn, N.W.
Beynon, F. County S., Tenby
Binmore, D. Royal Naval S., Twickenham
Blacking, D. G. London Rd. Preparatory S., Bromley
Blacoe, D. Notre Dame Coll. S., Everton Valley, L'pool
Blessington, J. C. Longfield, Balmoral, Belfast
Blew, R. L. Ladies' S., Sedgley
Blowey, H. M. Dagmar H., Hatfield
Blyth, F. E. Moravian Girls' S., Fairfield
Bond, D. English High S., Pera, Constantinople
Bowes, A. E. 7 Grange Crescent, Sunderland
Boyd, M. V. A. Killowen S., Belfast
Boyes, A. Millicent Alwyne Coll. Canonbury, N.
Boyes, A. Maud Alwyne Coll., Canonbury, N.
Brand, M. H. The Convent, The Avenue, Southampton
Brewer, G. Haslemere, Clapham Park
Britten-Holmes, G. St. Helen's, Clifton, Bristol
Bromley, O. E. G. Royal Naval S., Twick'ham
Brookes, D. Ebor H., Dorking
Brookman, E. M. F. Ridgmont S., Bristol
Brown, D. M. 21 York Road, Chorlton-cum-Hardy
Brown, F. Princess Gardens S., Belfast
Brown, H. I. The Friends' S., Mountmellick
Brown, J. O. D. The Friends' S., Mountmellick
Brown, M. P. Milton H., Atherstone
Brown, N. Ladies' S., Newtownards
Browning, M. F. Finsbury Park High S., N.
Bryant, D. M. Brentford Coll. S.
Bryant, U. Entry H., Diss
Buckenham, K. H. Rhianva Coll., Hunstanton
Buckley, U. The Convent, Eden Grove, Holloway
Burkett, M. Holmcroft S., Bromley, Kent
Burrows, E. Orphanage of Mercy, Kilburn, N.W.
Burrows, E. M. Private tuition
Cairns, J. St. Nicholas Girls' S., Liverpool
Campbell, K. I. Victoria Coll., Belfast
Cape Florrie, F. Orphanage of Mercy, Kilburn, N.W.
Cardwell, A. Girls' S., Promenade, South Shore, Blackpool
Carroll, N. St. Mary's Conv., Bruff
Carter, E. R. Hopton Congregational S., Mirfield
Chamberlain, M. Kent House Coll., Anerley
Chew, V. E. Stratford Abbey Coll., Stroud
Chisholm, M. St. Margaret's, Paisley
Chisholm, W. St. Margaret's, Paisley
Christiani, M. L. Upper St. Leonards Ladies' Coll.
Chute, E. Notre Dame Coll. S., Everton Valley, L'pool
Clapp, D. J. Haldon View S., Exeter
Clark, D. Holmcroft S., Bromley, Kent
Clarke, D. A. V. Finsbury Park High S., N.
Clemens, D. A. Kilmar Coll., Liskeard
Clery, C. St. Mary's Conv., Bruff
Clinch, N. Conv. of the Ladies of Mary, Croydon
Coates, I. V. Victoria Coll., Belfast
Coffin, R. Girton H., Chislehurst West
Colborne, P. Comm. S., Ripley
Coll, M. St. Mary's Conv., Bruff
Comerford, M. The Convent, Highgate Rd., N.W.
Cope, F. E. Burston H., Putney
Copley, A. Newlands High S., Heaton Moor
Cortield, J. Private tuition
Cottrell, L. F. Milton H., Atherstone
Crabtree, A. Sea View, St. Anne's-on-Sea
Cramer, A. The Convent, Highgate Rd., N.W.
Cregan, K. St. Mary's Convent, Bruff
Cresswell, E. A. Kempton H., Malvern Link
Crosby, H. W. Queen's Park Coll., Harrow Rd., W.
Crow, M. Conv. of Mercy, Clifford, Boston Spa
Crowhurst, E. M. Girton H., Chislehurst West
Dance, M. D. S. Leigh Bank Coll., Leamington Spa
Davis, E. M. Oxford H., Leytonstone
Davis, F. N. The Convent, The Avenue, Southampton
Davison, C. Private tuition
Davison, F. M. C. Weston S., Bath
Dean, D. Convent of the Ladies of Mary, Croydon
Debine, J. St. Nicolas Girls' S., Liverpool
de Francony, M. E. Addiscombe High S., Croydon
Denning, G. K. V. Private tuition
Deverell, G. 31–33 Brigstock Rd., Thornton Heath
Dewey, G. N. Highfield, Wallington
Doherty, M. St. Mary's Conv., Bruff
Donnolly, C. Notre Dame Coll. S., Everton Valley, L'pool
Dorling, D. Ebor H., Dorking
Douglas, M. I. The Friends' S., Mountmellick
Down, M. Ebor H., Dorking
Duncan, F. I. Highfield, Wallington
Duncan, L. L. Highfield, Wallington

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GIRLS, Lower Forms—*Continued.*

Dunham, L. I. Ashley High S., Long Sutton
Dunn, N. R. The High S., Warrington
Dunne, M. G.
Notre Dame Coll. S., Everton Valley, L'pool
Durell J. Oxford H., Leytonstone
Dwell, E. M. L.
Forest Gate High S. & Comm. Coll.
Eastwood, L.
Conv. of the Assumption, Richmond, Yorks
Eccles, H. Aintree High S., Liverpool
Edwards, A. Boughrood H., Brecon
Edwards, G. P. The Hollies, Malvern
Egerton, D.
Notre Dame Coll. S., Everton Valley, L'pool
Elder, A. Sherwood S., Woolwich
Eldred, I. Royal Naval S., Twickenham
Etches, E. M. Newnham H., Grantham
Evans, D. G. Cranley H., Muswell Hill, N.
Evans, P.
Notre Dame Coll. S., Everton Valley, L'pool
Evans, W. The Conv., Eden Grove, Holloway
Farquharson, M. Private tuition
Ferguson, E.
Intermediate S., Ballyclare, Co. Antrim
Finch, C. Woodward H., Sunderland
Findlay, E. M. Private tuition
Firks, L. K. Royal Naval S., Twickenham
Fleury, H.
The Convent, The Avenue, Southampton
Floyd, M. C. Elgin H., Powis Square, W.
Ford, D. M. Highfield, Wallington
Foss, L. G.
Leigh Bank Coll., Leamington Spa
Foster, M. L. Longfield, Balmoral, Belfast
Foster, N. The Coll., Goudhurst
Fowles, M. E. The High S., Warrington
Franklyn, D. Moravian Girls' S., Fairfield
Freeman, A. The Friends' S., Mountmellick
Furner, M. A. Manor H., Brixton Hill, S.W.
Fursdon, W. Brent Hill S., Hanwell
Gambier, A. I. V. F. Faversham Coll.
Garfitt, D. Oakmere, Northwich
Garner, M. A. Temple Square S., Aylesbury
Gault, E.
Intermediate S., Ballyclare, Co. Antrim
Gellan, M. I. Finsbury Park High S., N.
George, D. E. M. Royal Naval S., Twickenham
Gill, D. E. Comm. S., Ripley
Girling, E. E. Holmcroft S., Bromley, Kent
Goldsmith, O. M. Park H., Hale, Altrincham
Goody, O. M.
Park Coll., Northumberland Pk., Tottenham
Gortisolo, A.
Notre Dame Coll. S., Everton Valley, L'pool
Graham, W. J. Royal Coll., South Shields
Greaves, J.
Notre Dame Coll. S., Everton Valley, L'pool
Greenslade, N. G. Clarence Coll., Brighton
Gregar, L. M. Romford H., Forest Gate, E.
Gribble, A. The Coll., Goudhurst
Griffiths, R. I. The Newlands, Bootle
Grist, G. J. Temple Square S., Aylesbury
Gudgin, D.
Conv. of the Ladies of Mary, Croydon
Guthrie, J. G. Branksome Coll., New Milton
Hall, D. Dagmar H., Hatfield
Hankin, J.
Notre Dame Coll. S., Everton Valley, L'pool
Hanna, A. Woodward H., Sunderland
Hannon, A.
Notre Dame Coll. S., Everton Valley, L'pool
Harding, E.
Notre Dame Coll. S., Everton Valley, L'pool
Harding, F. Knock Intermediate S., Belfast
Hardy, C. Brent Hill S., Hanwell
Harrison, F. O. Stratford Abbey Coll., Stroud
Harrowsmith, N.
St. Ursula's S., Westbury-on-Trym
Harsant, A. M. Cranley H., Muswell Hill, N.
Hartley, N.
The Convent, Oak Drive, Fallowfield
Hemphill, C. M. Kensington H., York
Hennessey, E.
St. Ursula's S., Westbury-on-Trym
Henry, R. Gordonville Ladies' S., Coleraine
Herring, D. L.
Saxonholme High S., Whalley Range
Hickmott, P. Bradbourne Coll., Sevenoaks
Hilton, A. Stand Lodge, Radcliffe
Hirsch, E. The Newlands, Bootle
Hitchcock, E. S. Temple Square S., Aylesbury
Hobbs, I. D. Toynton H., Felixtowe
Honam, M.
Notre Dame Coll. S., Everton Valley, L'pool
Hopper, L. St. Mary's Conv., Middlesbrough
How, N. Temple Square S., Aylesbury
Howard, L. F. High S., Walton-on-Thames
Howard, M. E.
Notre Dame Coll. S., Everton Valley, L'pool
Huggins, E. I. The Bryant S., Wainfleet
Hughes, E. St. Nicholas Girls' S., L'pool
Hughes, E. E. Milton H., Atherstone
Hughes, L. St. Mary's Conv., Middlesbrough
Hughes, M.
Notre Dame Coll. S., Everton Valley, L'pool
Hulse, M. J.
Notre Dame Coll. S., Everton Valley, L'pool
Hunt, L. M. Duke Street S., Bath
Hunter, M.
Conv. of the Ladies of Mary, Croydon
Husband, D.
Conv. of the Assumption, Richmond, Yorks.
Hutchings, E. M. Torrhill Coll., Hastings
Ingram, K. le S. St. Kilda's Coll., Bristol
Irlam, M. B. Rose Hill S., Whittington
Izod, W. A. Crouch End High S., N.
Jackson, D.
Leigh Bank Coll., Leamington Spa
James, I. C. Temple Square S., Aylesbury
Johnson, M.
Notre Dame Coll. S., Everton Valley, L'pool
Jones, A. Boughrood H., Brecon
Jones, G. M. Ashlands Coll., Oswestry
Jones, K. Boughrood H., Brecon
Jones, L.
Notre Dame Coll. S., Everton Valley, L'pool
Jordan, E. A.
West End High S., Newcastle-on-Tyne
Josepovici, H.
English High S., Pera, Constantinople
Kelly, F. J.
The Convent, The Avenue, Southampton
Kennedy, A.
Convent Higher-Grade S., Blackburn
Kennedy, S.
Notre Dame Coll. S., Everton Valley, L'pool
Kerr, J. S.
Conv. of the Assumption, Richmond, Yorks
Keun, W.
English High S., Pera, Constantinople
Laing-Scott, D. M.
Kynerton, Sefton Pk., Liverpool
Lange, I. St. Helen's, Clifton, Bristol
Langman, E. M.
High School for Girls, Tavistock
Laughland, M. K.
The Convent, The Avenue, Southampton
Lavelle, A.
St. Ursula's S., Westbury-on-Trym
Lawrence, K. D.
Gainsborough H., Heene, Worthing
Learmouth, C. R. Moravian Girls' S., Fairfield
Lelasseur, A. L.
Conv. of the Ladies of Mary, Croydon
Leonard, E. M. St. Helen's, Clifton, Bristol
Leonard, G.
Notre Dame Coll. S., Everton Valley, L'pool
Lewis, G. E. Kempton H., Malvern Link
Liddall, B. Brent Hill S., Hanwell
Lillington, F. M. Lynton H., Portsmouth
Lines, M. Crouch End High S., N.
Livesey, N. Warwick H., Poulton-le-Fylde
Lloyd, E. Branksome Coll., New Milton
Lloyd, I. M. Ashlands Coll., Oswestry
Logan, L.
Intermediate S., Ballyclare, Co. Antrim
Lord, D. E. Girton H., Chislehurst West
Lovel-Permain, R.
The Convent, The Avenue, Southampton
Lowson, F. Newnham H., Grantham
Lucas, E. M. Private tuition
Lynn, C. M. Newnham H., Grantham
Macdonald, A. St. Margaret's, Paisley
Macdonald, K. St. Margaret's, Paisley
MacPherson, I. W.
The Convent, The Avenue, Southampton
Malcolm, A.
Notre Dame Coll. S., Everton Valley, L'pool
Manning, M. M.
Gainsborough H., Heene, Worthing
Mansergh, G. The Newlands, Bootle
Marsh, M.
St. Ursula's S., Westbury-on-Trym
Marshall, C. A. Sea View, St. Anne's-on-Sea
Marshall F. G. Sea View, St. Anne's-on-Sea
Mason, C A. Ashlands Coll., Oswestry
Mason, M. St. Ursula's S., Westbury-on-Trym
Mason, R. M. Walford Coll., Tipton
Maunder, H. R. Belmont S., S. Tottenham
McAdam, P.
Conv. of the Ladies of Mary, Croydon
McBurney, M. Ladies S., Newtownards
McCann, K. St. Margaret's, Paisley
McColl, L. A. The Newlands, Bootle
McCutcheon, I. Ladies' S., Newtownards
McFarlane, C. M. High S., Waltham Cross
McHugh, M.
Conv. of Mercy, Clifford, Boston Spa
McNamara, A. St. Nicholas Girls' S., Liverpool
McPartlan, A.
St. Mary's Conv., Middlesbrough
Mehigan, E.
Notre Dame Coll. S., Everton Valley, L'pool
Metaxa, V. M. Mansfield H., Maida Vale
Metcalfe, E. M. Oxford H., Leytonstone
Michalino, C.
English High S., Pera, Constantinople
Millar, M. E. St. Margaret's, Paisley
Miller, A. Ashlands Coll., Oswestry
Milton, C. G. Private tuition
Minahan, K. St. Mary's Conv., Bruff
Mines, M. Oxford Coll., Gunnersbury, W.
Minister, M. M. Felix H., East Dulwich, S.E.
Minski, L. Woodward H., Sunderland.
Miskelly, E. Ladies' S., Newtownards
Missak, A.
English High S., Pera, Constantinople
Mitchell, D. M.
Upper St. Leonard's Ladies' Coll.
Moloney, K. St. Mary's Conv., Bruff
Monk, M. St. Mary's Conv., Middlesbrough
Moody, M.
Hopton Congregational S., Mirfield
Moreton, M. A.
Wincham Hall Coll., Northwich
Morrow, M. Ladies' S., Newtownards
Morton, E. M. Sea View, St. Anne's-on-Sea
Moss, H.
Notre Dame Coll. S., Everton Valley, L'pool
Moverley, M.
Conv. of Mercy, Clifford, Boston Spa
Mulcahy, B.
Notre Dame Coll. S., Everton Valley, L'pool
Mullany, M.
Notre Dame Coll. S., Everton Valley, L'pool
Mulleny, G. E. M. St. Kilda's Coll., Bristol
Murphy, W.
Notre Dame Coll. S., Everton Valley, L'pool
Murray, F. Ursuline Conv., Kingsland, N.
Muteer, W. M. Alexandra Coll., Hastings
Newe, K. St. Mary's Conv., Bruff
Noakes, D. M. The Academy, W. Kirby
Noonan, M.
Notre Dame Coll. S., Everton Valley, L'pool
Norman, V. E.
Gainsborough H., Heene, Worthing
O'Brien, J. St. Margaret's, Paisley
O'Dwyer, M.
Notre Dame Coll. S., Everton Valley, L'pool
O'Gorman, M. St. Mary's Conv., Bruff
O'Grady, I.
St. Mary's Conv., Middlesbrough
O'Neill, A.
Notre Dame Coll. S., Everton Valley, L'pool
O'Neill, C.
Notre Dame Coll. S., Everton Valley, L'pool
O'Neill, I. St. J. Royal Naval S., Twickenham
Orrell, E. M. Moravian Girls' S., Fairfield
Orr Ewing, G. M. Private tuition
O'Sullivan, C.
Notre Dame Coll. S., Everton Valley, L'pool
O'Sullivan, M. St. Margaret's, Paisley
Paice, M. E. Faversham Coll.
Parsons, R. Bradbourne Coll., Sevenoaks
Partington, E. B. The High S., Warrington
Payne, D.,
Saxonholme High S., Whalley Range
Payne, E. P. Princess Gardens S., Belfast
Pearce, L. E. The Coll., Goudhurst
Peckett, W. St. Helen's, Clifton, Bristol
Pedlow, G. M. The Friends' S., Mountmellick
Pender, L. J. Rhianva Coll., Hunstanton
Pennell, L. Moravian Girls' S., Fairfield
Perkin, M. M. G.
High School for Girls, Tavistock
Perkins, M. Notre Dame Conv. S., Plumstead
Perryman, D. M. Alwyne Coll., Canonbury, N.
Phare, B. M. Addiscombe High S., Croydon
Pickup, G.
Convent Higher-Grade S., Blackburn
Plowman, M. Kempton H., Malvern Link
Portugalis, O.
English High S., Pera, Constantinople
Pound, D. M. Kensington H., York
Powell, A. M. High S. for Girls, Lampeter
Preston, E. K. Private tuition
Price, A. Boughrood H., Brecon
Quick, E. F. Lonsdale S., Mannamead
Randall, K. The Newlands, Bootle
Rawcliffe, M.
Girls' S. Promenade, South Shore, Blackpool
Read, E. K. Temple Square S., Aylesbury
Reardon, A. St. Mary's Conv., Middlesbrough
Rees, L. M.
Orphanage of Mercy, Kilburn, N.W.
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—The Rev. G. E. MACKIE, Chief Secretary and Inspector of the Church Schools Company, is prepared to visit Schools in any part of England and confidentially advise Principals on all matters connected with Recognition of Schools, Registration of Teachers, Government Grants, &c. Consultations by post or at the Church House, Westminster.

Diploma Correspondence College.

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EXAMINATIONS in PIANOFORTE PLAYING, SINGING, THEORY, and all branches of Music will be held in London and 350 Provincial Centres in DECEMBER, when certificates will be granted to all successful candidates. Last day of entry, November 15.

The Higher Examinations in Practical and Theoretical Music for Diplomas of Associate (A.L.C.M.), Licentiate (L.L.C.M.), the Teachers' Diploma, L.C.M., and Fellowship (F.L.C.M.) also take place in DECEMBER.

Medals, Prizes, and Exhibitions are offered for competition according to the Regulations.

LOCAL SCHOOL CENTRES.

Full particulars with reference to the formation of these Centres will be forwarded to Principals of Schools upon application.

SYLLABUS for 1904 may be had of the SECRETARY.

In the Educational Department students are received and thoroughly trained under the best professors at moderate fees. Day and Evening Classes are held.

A COURSE of TRAINING in Pianoforte and Singing for Teachers is held at the College.

VACATION LESSONS for Teachers and others are given at Easter, August, and Christmas.

T. WEEKES HOLMES, *Secretary.*

MR. ALFRED CLARK, B.A. (Lond.), for thirty years Principal of Taunton House School, Brighton, is open to take the work of a PRINCIPAL or of a FORM MASTER in case of illness or other emergency. Address—16 Outram Road, Croydon.

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(A Constituent College of the University of Wales.)

Principal—H. R. REICHEL, M.A., LL.D.

Next Session begins October 4th, 1904. The College Courses are arranged with reference to the Degrees of the University of Wales, and include most of the subjects for the B.A. and B.Sc. Degrees of the London University. Students may pursue their first year of Medical study at the College. There are special Departments for Agriculture and Electrical Engineering, a Day Training Department for Men and Women, and a Department for the Training of Secondary and Kindergarten Teachers.

Sessional Fee for Ordinary Arts Course, £11. 1s.: Ditto for Intermediate Science Course, £15. 15s. The cost of living in lodgings in Bangor averages from £20 to £30 for the Session. There is a Hall of Residence for Women Students in Upper Bangor. Fee, Thirty Guineas for the Session.

At the Entrance Scholarship Examination (held in September) more than Twenty Scholarships and Exhibitions, ranging in value from £40 to £10, will be open for competition.

For further information and copies of the various Prospectuses, apply to

JOHN EDWARD LLOYD, M.A.,
Secretary and Registrar.

UNIVERSITY COLLEGE, BRISTOL.

ENGINEERING EDUCATION.

Courses for CIVIL, MECHANICAL, MINING, and ELECTRICAL ENGINEERS, also for ARCHITECTS and SURVEYORS.

Professor—R. M. FERRIER, B.Sc., M.Inst.C.E.

Special facilities are offered in the way of College Scholarships and Engineering Works Scholarships, favourable arrangements being made with firms in or near Bristol for practical training to be obtained in works concurrently with the College Course.

Mining Engineering (including Assaying), Surveying, and Geology form prominent features of the Civil Engineering Scheme.

The Hydraulic Laboratory is provided with all appliances for the experimental study of the flow of water, and for the testing of Centrifugal Pumps and Turbines.

A Diploma is awarded to Students who pass the qualifying Examinations. The Associateship of the College is conferred on those Students who obtain a First Class Senior Diploma.

The Institution of Civil Engineers accepts the Preliminary Certificate of the College in lieu of its Entrance Examination.

Applications for vacancies in October to be made as early as possible to the undersigned, from whom Prospectus and particulars of residence in Clifton may be obtained.

JAMES RAFTER,
Registrar and Secretary.

THE VICTORIA UNIVERSITY OF MANCHESTER.

The Session will commence on 4th October next. A Prospectus and all information can be obtained on application. Special Prospectuses are also issued for the following Departments:—Engineering, Chemistry, Education, Theology, Commercial Education and Law. These, together with Prospectuses of the MEDICAL FACULTY, DENTAL, PHARMACEUTICAL, and PUBLIC HEALTH DEPARTMENTS, will be forwarded on application to the REGISTRAR.

ABERDARE HALL, CARDIFF.—RESIDENCE FOR WOMEN STUDENTS OF THE UNIVERSITY COLLEGE OF SOUTH WALES AND MONMOUTHSHIRE.

Principal—Miss KATE HURLBATT.

Fees, £42. 10s., £36, and £32 per annum. College tuition fees, £10 per annum. Scholarships of £40, £25, and Exhibitions of £10 will be awarded on the result of Scholarship Examination to be held on September 19th. A Medical School and Department for Secondary, Elementary, and Kindergarten Training are attached to the College. Residents can attend Dispensing Classes at Cardiff Infirmary. Apply to the PRINCIPAL.

HOME AND COLONIAL SCHOOL SOCIETY.

(Incorporated for Examination and Certificate purposes with the National Froebel Union.)

Training College (non-Government Branch) for KINDERGARTEN TEACHERS and LOWER FORM MISTRESSES IN HIGH SCHOOLS.

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Vice-Principal—Mrs. J. WHITE, D.Sc. (Lond.).

Students trained for the Examinations of the National Froebel Union.

Two Scholarships will be awarded to Students who have matriculated before entrance.

BEDFORD COLLEGE FOR WOMEN (UNIVERSITY OF LONDON), YORK PLACE, BAKER STREET, W.

The Session 1904-5 will open on Thursday, October 6th.

Students are requested to enter their names on Wednesday, October 5th.

Lectures are given in all branches of General and Higher Education. Taken systematically, they form a connected and progressive course; but a single course in any subject may be attended.

Courses are held in preparation for all Examinations of the University of London in Arts and Science, for the Teachers' Diploma (London), and for the Teachers' Certificate (Cambridge); and also a Special Course of Scientific Instruction in Hygiene.

Six Laboratories are open to Students for Practical Work.

Two Entrance Scholarships will be offered for competition in June, 1905. The Early English Text Society's Prize will be awarded in June, 1905.

Students can reside in the College.

Full particulars on application to the PRINCIPAL.

BEDFORD COLLEGE FOR WOMEN (UNIVERSITY OF LONDON), YORK PLACE, BAKER STREET, W.

DEPARTMENT FOR PROFESSIONAL TRAINING IN TEACHING.

Head of the Department—Miss H. ROBERTSON, B.A.

Students are admitted to the Training Course in October and in January.

The Michaelmas Term begins on Thursday, October 6th.

The Course includes full preparation for the Examinations for the Teaching Diplomas granted by the Universities of London and Cambridge.

Full particulars on application to Miss ROBERTSON.

BIRKBECK COLLEGE, BREAMS BUILDINGS, CHANCERY LANE, E.C.

DAY AND EVENING CLASSES.

New Session commences October 3rd.

UNIVERSITY OF LONDON.—Complete Courses for all the Examinations for Arts and Science Degrees.

SCIENCE CLASSES in every Branch, with Practical Work. Well equipped Laboratories for Chemistry, Experimental Physics, Zoology, Geology, Botany, and Metallurgy.

LECTURES on Political Economy, Commercial Geography, Commercial and Common Law, Bankruptcy, Equity and Conveyancing, Logic, Psychology, and Ethics.

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CONJOINT BOARD LECTURES and Practical Work in Chemistry, Physics, Biology, and Practical Pharmacy.

SCHOOL OF ART (Day and Evening).—Drawing, Painting, Designing, Modelling, Life, Wood Carving.

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CAMBERWELL GROVE, S.E.

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Mistress of Method—Miss CARPENTER.

Other Teachers and Lecturers.

Provides a practical course of Professional Training for Teachers in Secondary Schools, with abundant opportunity for class teaching in the Datchelor (400 pupils) and other Schools.

Students prepared for the Cambridge Teachers' Certificate and London Teaching Diploma.

Free Studentship awarded annually to a University Graduate.

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A comfortable Hall of Residence. Terms moderate.

Also Special Courses of Training for Teachers of Piano and Class-Singing.

THE MARIA GREY TRAINING COLLEGE FOR WOMEN TEACHERS

offers a full Course of Professional Training to Ladies who desire to become Teachers in Secondary Schools, or in Kindergartens. For all particulars as to qualifications for Entrance, Terms, Scholarships, Hall of Residence, &c., apply to the Principal, Miss ALICE WOODS, at the College, Salusbury Road, Brondesbury, N.W.

The Gilchrist Travelling Studentship (value £60) for Women Teachers will be awarded by the Council of this College in December, 1904.

For conditions of award apply to the PRINCIPAL of the College.

UNIVERSITY COLLEGE, LONDON (UNIVERSITY OF LONDON).

Principal—T. GREGORY FOSTER, Ph.D.

FACULTIES OF ARTS AND LAWS AND OF SCIENCE.

The Session 1904-5 will begin on Tuesday, October 4th.

The Principal and Deans will attend on Monday, October 3rd, and Tuesday, October 4th, from 10 a.m. to 1 p.m., for the admission of students.

The Department of Fine Arts (Slade School) will open on Monday, October 3rd.

The Courses in the Department of Laws will begin on Monday, October 10th.

FACULTY OF MEDICINE.

The Session will begin on Monday, October 3rd. Introductory Lecture at 4 p.m. by Professor J. NORMAN COLLIE, Ph.D., F.R.S.

The following Prospectuses are now ready, and may be had on application to the Secretary:—

Faculty of Arts and Laws (including Economics).
Faculty of Science.
Faculty of Medicine.
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The Department of Fine Art.
The Department of Engineering.
The School of Architecture.
The Department of Public Health.
Scholarships, Prizes, &c.
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FEES.

Composition Fee, 3 years' course in the Faculty of Arts	63 guineas
Composition Fee, 3 years' course in the School of Engineering or of Architecture	115 guineas
Composition Fee, Preliminary Scientific Course	25 guineas
Composition Fee, Complete M.B. Course ...	140 guineas

Fees in the Faculty of Science vary, according to the course taken, from about 35 guineas to 40 guineas a year.

Students are admitted to courses of instruction in any one subject, provided there be room.

Special provision is made for Post-Graduate and Research work in the various subjects taught at the College.

W. W. SETON, M.A.,
Assistant Secretary.

THE CAMBRIDGE TRAINING COLLEGE FOR WOMEN TEACHERS.

Principal—Miss H. L. POWELL,
late Scholar of Newnham College (Hist. Tripos, Class I.), late Head Mistress of the Leeds Girls' High School.

A residential College providing a year's professional training for Secondary Teachers.

The course includes preparation for the Cambridge Teacher's Certificate (Theory and Practice), and for the Teachers' Diploma of the London University. The Students attend the Cambridge University Lectures on Teaching, in addition to those of the Resident and Visiting Lecturers. Ample opportunity is given for practice in teaching science, languages, mathematics, and other subjects in various schools in Cambridge.

Students are admitted in January and in September. Full particulars as to qualifications for admission, scholarships, and bursaries may be obtained on application to the PRINCIPAL, Cambridge Training College, Wollaston Road, Cambridge.

THE INCORPORATED FROEBEL EDUCATIONAL INSTITUTE.

TALGARTH ROAD, WEST KENSINGTON, LONDON, W.

Recognized by the Board of Education as a Training College for Secondary Teachers.

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Treasurer—Mr. C. G. MONTEFIORE, M.A.

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TRAINING COLLEGE FOR TEACHERS.

Principal—Miss E. LAWRENCE.

KINDERGARTEN AND SCHOOL.

Head Mistress—Miss A. YELLAND.

Students are trained for the Examinations of the National Froebel Union, and for the University of Cambridge Teachers' Examination, and Special Classes are held in subjects required for the Cambridge Higher Local Examinations.

TWO SCHOLARSHIPS of £20 each, and two of £15 each, tenable for two years at the Institute, are offered annually to Women Students who have passed certain recognized Examinations.

Prospectuses can be obtained from the PRINCIPAL.

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Inter. Science and Arts.—Monday, October 3.
B.Sc. and B.A.—Monday, October 3.

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ABOUT
300
STUDENTS OF UNIVERSITY TUTORIAL COLLEGE
HAVE PASSED
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UNIVERSITY COLLEGE SCHOOL, LONDON.
GOWER STREET, W.C.
Head Master—H. J. SPENSER, M.A., LL.D., St. John's College, Cambridge.

Michaelmas Term begins Wednesday, September 21st. The School is organized as a First Grade Modern and Classical School, with Higher Commercial, Science, and Engineering Departments.
For Prospectus, apply to
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WANDSWORTH TECHNICAL INSTITUTE.

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CLASSES FOR MATRICULATION AND INTERMEDIATE SCIENCE, BACHELOR OF SCIENCE in Physics, Chemistry, Pure Mathematics, and Applied Mathematics.
Saturday Morning Classes in Theoretical and Practical Physics and Botany.
Class for LONDON UNIVERSITY DIPLOMA for Secondary Teachers.
Prospectuses may be obtained free at the Institute or by post.

THE ANSTEY PHYSICAL TRAINING COLLEGE FOR WOMEN TEACHERS

PROVIDES a full course of instruction in Swedish Educational Gymnastics, Medical Gymnastics, and Massage, the aim being to send out trained Teachers with increased health and bodily vigour, mental strength, and moral power; to spread a knowledge of Physiology and the Laws of Health; to teach Gymnastics, Outdoor Games, Dancing, Swimming, and other forms of Physical Exercise in Schools and Colleges; to treat cases of Spinal Curvature, and many ailments which can be cured by scientific movements.
This is a most attractive vocation for educated women, and there are plenty of good openings for those trained at this College.
Students are almost always engaged before finishing the course.
For further particulars apply to the Principal, Miss ANSTEY, The Leasowes, near Halesowen, Worcestershire.

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For MATRICULATION, B.A., L.L.A., A.C.P., and other University and Professional Examinations, and for Independent Study. Students are brought into touch with highly-qualified graduates, and enjoy the best University instruction at their own homes.

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German.	Higher Math.	Botany.	Music Comp.
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THE SYSTEM OF INSTRUCTION
is thoroughly individual, and ensures to each student the closest care and attention. All work corrected with full notes.

THE STAFF
consists of Graduates of Oxford, Cambridge, London, Dublin, and Royal Universities; Prizemen, Science Medallists, and Specialists.

Intending Students should write FULLY to the Principal,
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CLAPHAM COMMON, S.W.

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Preparation for the Preliminary Examination of the Scottish Universities, all of which grant Degrees to Women. Fees from 12s. per term
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Special help given in home study to non-candidates, in the History of Fine Art, Literature, History, Languages, Bible Study, &c.
Numerous Oral Classes also conducted.
Large staff of efficient and experienced tutors.
Prospectus, post free, from the Secretary, Miss S. E. MURRAY, 5 Melville Street, Edinburgh.

LONDON MATRICULATION and PROFESSIONAL PRELIMINARY EXAMS.—Mr. ALEX. W. BAIN, B.A. (Lond.), B.Sc. (Hons. Lond.), F.C.S., Anglo-Saxon and Early English Text Society's Prizeman (Univ. Coll., Lond.), Silver Medal and Exhibition in Chemistry (Univ. Coll., Lond.), also Prize in Organic Chemistry (Univ. Coll., Lond.), Honours in Theoretical and Practical Chemistry (Board of Education), Sub-Examiner to the Univ. of London and College of Preceptors, &c., holds Classes (small) for the above and other Exams., at **207 Gray's Inn Road, London.** Coaching in Science and Advanced Mathematics for Degree Exams. by Private Tuition. Over 1,700 successes in 14 years.

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Classes and Tuition for **Legal and Medical Preliminaries, Accountants', Scholarship Examinations. Oxford and Cambridge, R.U.I., &c.**
Papers Corrected for Schools. Vacation Tuition.
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Prospectus and full details on application to R. C. B. KERIN, B.A. Lond., First of First Class Classical Honours, Editor of "Phædo," "Pro Plancio," &c.

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1892-1903.—London Matric., 105; Inter. Arts, Sc., and Prel. Sci., 125, 6 in Hons.; B.Sc., 1896-1903, 23; B.A., 1891-1901, 63, 11 in Hons.; Medical Prelim., 150; many other Successes. Scholarships, R.U.I., Indian Civil, Oxford and Cambridge, &c.

B.A. LONDON, 1899-1902, 36 successful.
M.A., 4 (1898, 1899, 1901, 1902).
B.A., 1903, 10 out of 12.

ST. GEORGE'S TRAINING COLLEGE FOR WOMEN TEACHERS provides a Course of Professional Training in preparation for Work in Secondary Schools or in Families.
The Students attend the University Lectures on the Theory, History, and Methods of Education, and have systematic practice in Class Teaching in Schools.
A Bursary of £30 is offered to a Graduate entering in October.
Apply for further particulars to the Principal, Miss M. R. WALKER, 5 Melville Street, Edinburgh.

GERMAN MISTRESS. Churchwoman. Highest references: successful coach.—Thorough English, French (Paris), Music (good teacher), Drawing, Painting, Speciality: Languages; excellent method. PAULA, Mrs. Hooper's, 13 Regent Street, adjoining Waterloo Place, London. Established 1880. Interviews daily. Telephone, 5097 Central.

EXPERIENCED MATRON. Boys' School preferred. Warmly recommended. Punctual, painstaking, and methodical. Fond of children; kind in sickness. Good packer. Thoroughly domesticated. Excellent testimonials.—C. H., Hooper's, 13 Regent Street, Pall Mall. Others. Also some good House Mistresses.

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TRAINED KINDERGARTEN MISTRESS (Higher Certificated), disengaged September. Mathematics (Junior and Senior Cambridge Exams.). Three years' experience. Apply—M. B., 13 Park Road, Monton Green, Manchester.

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ALBERT EMBANKMENT, S.E.
(UNIVERSITY OF LONDON.)

The WINTER SESSION will commence on Oct. 3rd.
The Hospital occupies one of the finest sites in London, and contains 602 beds, of which about 540 are in constant use.
Entrance and other Scholarships and Prizes (twenty-six in number), of the value of more than £500, are offered for competition each year.
Upwards of 60 resident and other appointments are open to Students after qualification.
A Students' Club forms part of the Medical School buildings; and the Athletic Ground, nine acres in extent, situated at Chiswick, can be reached in 40 minutes from the Hospital.
A Prospectus, containing full particulars, may be obtained from the Medical Secretary, Mr. G. RENDLE.

J. H. FISHER, B.Sc. Lond., *Dean.*

ST. BARTHOLOMEW'S HOSPITAL
AND COLLEGE.
(UNIVERSITY OF LONDON.)

The WINTER SESSION will begin on Monday, October 3rd, 1904.
Students can reside in the College within the Hospital walls, subject to the Collegiate regulations.
The Hospital contains a service of 750 beds. Scholarships and Prizes of the aggregate value of nearly £800 are awarded annually.
The Medical School contains large Lecture Rooms and well appointed Laboratories for Practical Teaching, as well as Dissecting Rooms, Museum, Library, &c.
The Club Ground of the Students' Union (10 acres) is at Winchmore Hill, within easy reach of the Hospital.
For further particulars apply, personally or by letter, to the WARDEN of the College, St. Bartholomew's Hospital, E.C.
A handbook forwarded on application.

ROYAL HOLLOWAY COLLEGE.
(UNIVERSITY OF LONDON.)

The MICHAELMAS TERM begins on October 3rd, 1904. The College prepares Students for the London Degrees in Science and Arts, and for the Oxford Honour Examinations.
Ten Entrance Scholarships, from £50 to £60 a year, tenable for three years, will be offered for competition in July, 1905.
For further particulars apply to the SECRETARY, Royal Holloway College, Englefield Green, Surrey.

LONDON COUNTY COUNCIL.

TRAINING OF TEACHERS FOR SECONDARY SCHOOLS.

A POST-GRADUATE COURSE for the Training of Teachers for Secondary Schools is conducted under the direction of the London County Council at the London Day Training College. The Course is confined to Students who have taken a University Degree or passed Examinations equivalent to those required for a Degree. The next Course will commence in October, 1904. The fee for the year's Course is £20. In the case of Students who reside within the County of London, the London County Council is prepared to remit the fee in special cases, if it is satisfied that Students are unable to go through the Course without financial assistance. The Lectures and Practical Work are arranged under the general supervision of Professor ADAMS, the Principal of the College, 9 Southampton Street, High Holborn, W.C., to whom early application should be made by intending Students.

G. L. GOMME,
Clerk of the Council.

CHERWELL HALL, OXFORD.
A TRAINING COLLEGE FOR WOMEN TEACHERS.

A RESIDENTIAL COLLEGE providing a year's Professional Training for Secondary Teachers.
The Course includes preparation for the Oxford Teachers' Diploma and the Cambridge Teachers' Certificate, and the Teachers' Diploma of the University of London.
For instruction in the Theory and History of Education, the Students attend the Lectures of the University Reader in Education. The practical work in Teaching in Schools and Demonstration Lessons, &c., is under the supervision of the Principal and Staff of the Hall.
Particulars as to qualifications for admission, Scholarships, &c., may be obtained by application to the Principal, Miss MACKENZIE-SMITH, Cherwell Hall, Oxford, or the Hon. Sec., Miss MARGARET BERNARD, High Hall, Wimborne.

ST. MARY'S HOSPITAL MEDICAL SCHOOL,
PADDINGTON, W.
(UNIVERSITY OF LONDON.)

The WINTER SESSION will begin on OCTOBER 3rd, when an Introductory Address will be delivered by Professor A. E. WRIGHT, Lecturer on Pathology in the Medical School.
The HOSPITAL is close to Paddington Station (G.W.Ry.), Marylebone (G.C.Ry.), Edgware Road and Praed Street (Met. and Dist. Ry.), and Lancaster Gate (Cent. Lond. Elec. Ry.).
CLINICAL PRACTICE. All Dresserships and Clerkships (In-Patient and Out-Patient) are of four months' duration, so that each student serves as Surgical Dresser and Medical Clinical Clerk for a period of eight months, besides holding office in the various Special Departments.
The Resident Medical Officers (18 annually) are appointed by competitive examination; each appointment being of six months' duration.
ENLARGEMENT OF THE HOSPITAL. With the opening of the New Wing, now almost completed, the number of beds will be increased to 350, and two additional Operating Theatres, a Clinical Theatre, an enlarged X-Ray Department, and new Clinical Laboratories will be provided.
UNIVERSITY COURSES. The Medical School as one of the Schools of the University of London provides complete courses for its Medical and Surgical Degrees, under Recognized Teachers of the University.
SPECIAL TUITION is also provided for the Medical Examinations of the Universities of Oxford, Cambridge, and Durham, for the Primary and Final F.R.C.S., and for the D.P.H.
ENTRANCE SCHOLARSHIPS. Four Open Scholarships in Natural Science, value £145 to £52. 10s., and Two University Scholarships, value £63 each, will be competed for on September 20th and 21st next.
Calendar and full particulars on application.

H. A. CALEY, M.D., F.R.C.P., *Dean.*
B. E. MATTHEWS, B.A., *Secretary.*

KING'S COLLEGE, LONDON.
(UNIVERSITY OF LONDON.)

DEPARTMENT FOR TRAINING TEACHERS FOR SECONDARY SCHOOLS.

The Course, which is intended to meet the requirements of the Teachers' Registration Council, is both practical (including properly directed work in a Secondary School) and theoretical (preparing for the London Teachers' Diploma and the Certificate of the Teachers' Training Syndicate).
The Course occupies a year, beginning in October or January.
For further particulars apply to the SECRETARY, King's College, Strand.

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The Educational Times.

Wanted: An Educational Statesman.

THE centre of educational discussion during the month has been the Educational Science Section of the British Association at Cambridge. This section, one is glad to observe, has been steadily gaining a very prominent position in the jostling crowd of interesting subjects, partly owing to the distinctive character of the successive presidents, mainly perhaps by reason of the increasing public sense of the far-reaching importance of education in every form. In spite of, and to some extent because of, the admirable presidential address of the Bishop of Hereford, the meeting has largely served to impress dissatisfaction with the educational situation. As Dr. Percival doubly emphasized, the essentials of Matthew Arnold's criticism of fully a generation ago still stand valid at this very day, notwithstanding the continuous enforcement it has received from the progress of events; and it may be added that the spirit of that criticism has been continuously finding more and more extensive fields of application. Meeting follows meeting, conference follows conference, and at the last as at the first the discussion is dissipated and the effects are grievously wasted. At the present meeting we look in vain for a comprehensive standpoint on which the energies of the various speakers are concentrated; each goes his several way. The battle to be fought requires strategic and tactical combination. The Bishop laid his finger on the point in a single golden sentence: "If that report"—Matthew Arnold's "illuminating report on the schools and universities of the Continent as he saw them thirty-seven years ago"—"had been turned to practical account at the time, if some English Statesman, like Wilhelm von Humboldt, had been enabled with a free hand to take up and give effect to Mr. Arnold's chief suggestions, as Humboldt and his colleagues gave effect to their ideas in Prussia in the years 1806 onwards, the advantage to our country to-day would have been incalculable." Where is that English Statesman?

Dr. Percival's general survey, though confined to the time-honoured route from primary through secondary to university education, and modestly qualified in point of personal experience and training, is undoubtedly a most suggestive criticism of existing conditions. We present the main points in another column, and can only touch on certain aspects here. The foundation of the whole system no doubt lies in the physical health of the community. Fortunately, there seems, on the recent official investigations, to be no positive ground for supposing that there is any general deterioration, and such unquestionable deterioration as exists affects immediately only the lower classes of the population. Yet it is clear that the question demands close and decisive official vigilance, generally on national grounds, but also specially on educational grounds. The athletic craze, so far as the higher schools and the universities are concerned, ought not to present any insuperable difficulty to discreet and firm administrators. Elementary education has hitherto received the lion's share of official attention, and there are signs of a tendency to misapply less of that attention in worse than useless worry of the teachers, and to approximate to the satisfaction of the sensible requirements urged by Dr. Percival. Much greater importance attaches to the position and possibilities in the secondary sphere. The secondary reforms of the Act of 1902 are but modal and limited, and as yet dubiously efficient on a very minor scale. Though Dr. Percival's estimate of the Local Authorities as "altogether unprepared and untrained for the responsible work now thrown upon them, and hampered by their besetting fear of the ratepayers," is not to be disputed, it must still be acknowledged that the more important bodies have been exhibiting a marked sense of their desire to do the best, and have willingly sought for skilled advice and followed it—an excellent example to the less important bodies. But when all is said for them that can reasonably be said, and when they have all done their best within the limits of their powers, there still remains a vast deal to be done—in fact, almost everything of a thoroughgoing nature. True, as the Bishop suggested, Government might expedite progress by offering "more liberal secondary education grants to be earned by efficient schools, and initial grants towards buildings and scientific equipment, to be met by contributions from local rates or other local sources, public or private." And other

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things might be done, nationally or locally. But there is needed something more than any or all of such details, useful as they undoubtedly would be. As to the preparatory schools, every one will agree that inspection of private schools—real, instructed, liberal-minded inspection—is an essential thing; though one must still put in a *caveat* for large liberty of administration. And, as to training and registration, both are, of course, beyond the stage of profitable argument.

The Bishop's suggestions for such university action as would "pour a new stream of intellectual influence through our secondary education" are well worthy of attention. As ex-head master of two great public schools and ex-head of an Oxford college, he speaks with commanding authority as well as with practical judgment. The influence of Oxford and Cambridge is well understood, and, whatever their policy, will continue to affect secondary schools throughout the country; but the rise of the new universities ought to warn them that their pre-eminence may be materially affected by a perverse adherence to the old ways. Happily, they have been showing symptoms of a wise tendency to make at least some accommodations with the newer spirit. But, after all, there is a very wide area of secondary education that does not necessarily depend upon them, and, though secondary education cannot be systematized without giving them a large consideration, neither can it be systematized in single regard to them. Still, the closer and the fuller the connexion, the better will it be for all parties.

Where is that Statesman? Improvements here and there, encouragements here and there, accommodations here and there—these are all to the good, certainly. But what seems especially called for now is a real and living co-ordination of the whole system as a national function, with adequate driving power at every point. Some of our theorists, we are well aware, would first demand the production and acceptance of an ideal educational creed formulated in principle, if not in detail. If we wait for such a counsel of perfection, we shall have to muddle on indefinitely in the old fragmentary and spasmodic fashion. The home experience of the recent past, the available suggestions from the experience of other civilized nations, native talent and instinct—these ought to be able to furnish a working formula that might do great things, if not the greatest things or all things. In any case, the idea of progress must be left freely open in scope; and it may be judicious not to pitch hopes unduly high. What is primarily wanted is that Statesman.

We observe with much interest the *Teachers' Guild Quarterly* view of "the main lesson" of the Mosely Educational Report. The writer is "firmly convinced that the chief hope for English mental progress, the chief incentive to that enthusiasm for education which we lack, lies in the arousing of our working classes and those who stand next above them in the social scale to realize the supreme importance of a thorough equipment for life for themselves, their children, and the whole nation—to put more 'soul' into their work." We are not so sure that our desiderated Statesman, if he but would appear, would lack adequate support: we are perfectly sure that he would be backed loyally and vigorously by all the working-class members in the House of Commons, not one of whom but realizes vividly the supreme importance of a thorough educational equipment. To our mind, it is much more a question of leading than a question of enthusiastic following. Where is that Statesman?

"India's Chief Need."

Our enterprising contemporary, *Indian Education*, commenting on the Fourth Quinquennial Review of "Progress of Education in India" (1897–8—1901–2) remarks that "India's chief need" is further expenditure on primary education. To those that "think Imperially," or ought to do so, this Report should be specially interesting and instructive. In 1901–2 there were some 3,204,000 boys and girls receiving primary instruction in public institutions; that is to say, about 1·5 per cent. of the population. The three round millions were boys; the odd thousands were girls. Yet these three millions are only one-sixth of the boys of school-going age: five out of every six boys of school age do not enter a public school. The private institutions have a roll of 574,000 scholars. The total number of pupils at the elementary stage of instruction is thus 3,778,000—a figure not approaching 2 per cent. of the population.

Apart from the variety of systems in the different provinces, the conditions of even this meagre supply of educational facilities are somewhat remarkable. *Indian Education* (July) says:

> In relatively few places have really suitable buildings been provided in which to house the primary schools, and these are principally the property of Government and of missionary bodies; but in very many districts it is still the case that nothing better than the shade of a tree, or a cattle-shed, or a verandah, or sometimes a temple-court, is provided for the village school. In these circumstances we are not surprised to learn that the average cost per month of maintaining a village school is the small outlay of Rs. 11 [14s. 8d.] . . . The use of the sand-board and lamp-black may be dying out, but in some provinces the plantain-leaf still does duty for paper, the luxury of benches and writing-desks is not everywhere enjoyed, and on rough bamboo or mud floors the children have to squat. The teacher has to instruct five or six classes at a time in most schools, and, utterly untrained himself in very many instances, naturally does not know the art of informing the minds of his young charges.

It can hardly be regarded as surprising, then, that our contemporary notes "in some quarters a disposition to criticize the Government of India for having neglected primary education in the past"—that is to say, roughly, during a century of unrestricted control of the destinies of the country. Four-fifths of such schools as exist are private schools—of the character just indicated. Yet, says our contemporary, "Government has not been entirely neglectful or indifferent"—an apologetic expression that carries an appalling condemnation. Government, we are told, has experienced "extreme difficulty in bringing home to the ignorant masses the value of education." How could it be otherwise, on the record of the past? Here is a sample of the difficulty:

> Night schools, for example, encouraged throughout the quinquennium, have proved an almost total failure; and rural schools are still on their trial. Little progress, if any, has been made during the last five years, it is true; but this has been due principally to the disheartening indifference of the masses to the value of knowledge.

Is this really so? Can we seriously accept the view that the Indian population is so hopelessly averse to education, in

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spite of the neglect or the activity of Government in the past? The explanation does appear to conflict harshly with our previous notions of their characteristic qualities. Is it the methods that are at fault? Or what really is the matter? Anyhow, now at length the Government, we learn, is committed to the enterprise of supplying some assimilable "instruction improved in methods and standards to meet modern ideas and requirements to the scattered and distant hamlets, to the poorer ryots, to the landless labourers, to the ignorant low castes, and to the wild jungle tribes"; and to the incidental attempt to create a desire for education among these people. Our contemporary, therefore, feels "that the hopes of better things are increased tenfold." It rejoices in the recognition of the Resolution on Education that in the opinion of the Government of India "primary education has hitherto received insufficient attention and an inadequate share of the public funds; that it should be made a leading charge upon provincial revenues; that in provinces where it is in a backward condition its encouragement should be a primary obligation; and that, in so far as District or Municipal Boards are required to devote their funds to education, primary education should have a predominant claim upon their expenditure." Yes, good words. But those that consider the existing financial conditions, and that look back to the great Dispatch of 1854, and to the Report of Sir William Hunter's Commission of 1882, to say nothing of Macaulay, Bentinck, and Hardinge, will be able to estimate the probable significance of such fine sentiments in practice. Why do our Indian administrators calmly lie under the reproof of educated Indians' citations from Macaulay's speeches? Why was Mr. Baines able to show in his Census Report of 1891 that only 11 males in 100, and 1 female in 200, were all that could read and write? Why was Mr. Nugent, a high official at Bombay, in a position to declare openly a few years ago that, whenever a reduction of expenditure had to be made, it was the Education budget that always suffered first? This is a very melancholy business indeed in these Imperial times; and it is freely alleged that there is much more in it than meets the uninstructed eye. Yet there is enough on the face of it to make every thinking person among us anxious and inquiring.

NOTES.

THE Report of the Inter-Departmental Committee on Physical Deterioration has important bearings on education, and is sure to lay new work on educational administrators and teachers, as well as more compulsion upon parents and pupils. The original terms of reference were strangely enough confined to the alleged deterioration in Army recruits, but were judiciously enlarged to this:

(1) To determine, with the aid of such counsel as the medical profession are able to give, the steps that should be taken to furnish the Government and the nation at large with periodical *data* for an accurate comparative estimate of the health and physique of the people; (2) to indicate generally the causes of such physical deterioration as does exist in certain classes; and (3) to point out the means by which it can be most effectually diminished.

The first volume (Cd. 2175) contains the Report; the second (Cd. 2210), the minutes of evidence; and the third (Cd. 2186), appendix and general index. On the basis of the Report, Sir Thomas Lauder Brunton has started a scheme for the formation of a National League for Physical Education and Improvement by uniting and co-ordinating all the bodies now labouring for the health of the people. In connexion with this we take the opportunity of drawing attention to a comprehensive and instructive paper on "School Hygiene" by Dr. R. T. Williamson, M.D., F.R.C.P., of Owens College, just published in the new series of "Health Lectures for the People" (3d., Sherratt & Hughes, Manchester).

THE Board of Education have just issued a Circular (No. 515) directing the careful attention of Local Education Authorities to the Report of the Inter-Departmental Committee on the Model Course of Physical Exercises (Cd. 2032) and to the Syllabus of Physical Exercises for use in Public Elementary Schools prepared in accordance with the recommendations of the Committee (9d., Eyre & Spottiswoode). They suggest that existing teachers may have "opportunities for training in the principles and methods of the new course" by means of evening classes and Saturday morning or afternoon classes; and they "are in communication with various Training College Authorities with a view to securing that all students who pass out of the Colleges in future, so far as possible, be qualified to give instruction in the course." And they "consider that the Syllabus should be adopted in all Public Elementary Schools as soon as is reasonably possible." Moreover, they "attach great importance to the regularity and thoroughness with which physical training should be given," and specify "at least one hour per week," in two periods of thirty minutes, or three periods of twenty minutes, as the ordinary dose for the Formal Lessons, while the Recreative Exercises are to be "daily and constantly practised" as recommended in the Report. Further, "it is recommended that where possible a system of taking physical measurements of the children at regular intervals should be instituted." Excellent; but this needs skill and care, and the advice of the British Association leaders in this sort of investigation ought to be invoked at once.

THE "Co-operative Commonwealth" may be left an open question of no great immediate urgency, but it is gratifying to find anticipators of that Utopia laying special stress on the importance of "true education" for the children. We quote from an address by Mr. C. H. Grinling, recently printed in the *Woolwich Labour Journal*:

But now the time has come when in the sphere of the spiritual, no less than in the sphere of the social and the industrial, we must nail our colours to the mast, and realize that our freedom is given to us in order that all the finest powers of the mind and soul may be employed, unfettered by the dogmas of the past, not in order that we as individuals may save our own souls alone, but that we may save the souls of the whole world. If we are to realize this, the education of our children, about which we have been fighting lately, must be deep and true. It must be an education that teaches our children from the earliest day of birth to open their faculties to all the beauties of the world, so that the child's tiny brain asks its own questions, and forms its own interpretations of what it sees and hears. Its questions we should encourage and answer freely, and when in our ignorance we have no answer we should search for the true answers and the true interpretations of life in order that the children shall be encouraged to desire to

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understand. Above all we shall determine that we shall be seekers after the true education which insists on the drawing forth of all the finer feelings and powers of the mind, the heart and soul. The spirit and the soul cannot be nurtured by bygone traditions alone. The soul of man must be free, and the soul of man can only develop in the true freedom of the Co-operative Commonwealth.

This is a very significant utterance, and Mr. Grinling but formulates what is in the mind of many other thoughtful men in the leadership of labour. When the rank and file have absorbed the doctrine, and realized its potentialities, we shall be on the eve of striking developments. If the process will necessarily be very slow and arduous, the results will be all the more refined and permanent. Whether one of the results will be the evolution of the Co-operative Commonwealth is a very subordinate consideration.

The Church Schools Emergency League is up in arms against the Board of Education's recent circular (No. 512, July 19), instructing inspectors on certain questions relative to the approval of time-tables in voluntary schools. The circular, says the League, "ignores our trust deeds; by a side wind it perverts the statutes and customs of the immemorial past; it is a violation of the spirit of the Act of 1902; a betrayal of those friends of denominational schools who, on the faith of the Prime Minister and the Unionist party, loyally supported that Act; it opens the way to the destruction of Church schools and the practical confiscation of our buildings, without the necessity for any reversal or change of legislation." Here is a formidable indictment, which will surprise even the opponents of the Act of 1902. But it seems to press the facts hard. The approval that used to be given to time-tables including times for taking children to church during school hours was intelligible enough so long as the rest of the school hours satisfied the Board on the point of school attendance; but "it was laid down in 1871, and in later years, that no part of such attendance at church should be registered as school attendance." "Since that time two great changes have taken place—the introduction of compulsory attendance and the imposing of a duty upon every Local Authority to make by-laws respecting school attendance, which by-laws, when made, have statutory force"; and "the attendance so prescribed is for each child," with certain exceptions, "during 'the whole time that the school is open for the instruction of children of similar age.'" Has the Board, then, done more than to recognize an obligation that is practically statutory, and to enforce strictness in place of a customary laxity? At the same time the difficulty ought to be readily got over in practice without conflict with the time-table. The first thing is to realize exactly what the circular means, and what it does not mean.

We had understood that Prof. Postgate's scheme of Latin pronunciation had been accepted at Oxford and Cambridge, and had not been disapproved in the classical schools. But here comes Mr. Robert Bridges, maintaining, in the *Speaker* (July 30), the thesis that "the pronunciation of Latin used in our universities and public schools is one real cause of the degradation of our own native speech." He finds from "the text-book of English phonetics which I am told is in most general use among those who are training the young" that "*Augusta* is pronounced *Ergvster*." Whereon he remarks:

Now, examine the mid syllable of *Augusta*. There are in Latin a long and a short *u*, fairly represented in English by the vowels of *fool* and *full*. But we have also two other sounds which we also write *u*: first the *u* of *but*, which is not a *u* at all but a modified *a*, and it may be shown by an inverted *a*, thus *ɐ*; and, secondly, the impure *u* of *union*, which is the long *u* preceded by a consonantal *i* or *y*, as the *i* in the Latin *iudex* (= *yudex*, the Etonian *dgudex*), so that *union* might for its first syllable be phonetically written *yunion* (like *you*, &c.) Now, it would seem incredible, but it is a fact, that boys in reading Latin are taught to substitute these two impure vowels, which are unknown in Latin, in place of the true ones, which are common to both languages; so that at Eton and Oxford they say *tyu* for *tu*, and *mvndvs* for *mundus*, and *Ergvster* or *Orgvster* for *Augusta*.

This he affirms to be an "extremely typical" example. He also points out—(1) that "Greek and Latin poetry is written on a measured time system," and (2) that "the scholars [at Oxford and Cambridge] do not read it by a time system." Eventually, he declares that "the prevailing system fully justifies all that Prof. Perry and Mr. Wells say." "The universities are most to blame." "The schoolmasters' feet are entangled on all sides, and it is difficult for them to initiate any movement of escape. And yet, if, say, twenty teachers of Latin would meet together for a week in the Long Vacation, and read their beloved poets aloud to each other with proper pronunciation and accent, I do not believe that peradventure five of the twenty would be found to return to their old work."

In the "Life and Letters" of the late Prof. Cowell, just published by Messrs. Macmillan, there is a very suggestive remark of his on the occasion of his acceptance of the Professorship of English History in the Presidency College, Calcutta: "One is wasted in England; not wanted. While in India every one is wanted who can go." We are not concerned, for the moment, with the needs of India; what we wish to emphasize is the waste involved in the deflection of a scholar of such quality as Cowell to work that might be equally well done by any other of a thousand commonplace graduates. How many of our specialist scholars are similarly wasted for want of suitable posts—posts loudly demanded by the progress of modern investigation! Even in the field of Oriental study, we cannot but recall Prof. Rhys Davids's recent laments; and there are so many other fields.

A recent criticism on free public libraries in an article by Mr. Churton Collins receives a striking commentary in the Report of the Public Libraries Committee of the City of Westminster for the year 1903–4. Mr. Collins said:

I cannot speak from statistics, but I should probably not be exaggerating if I said that more than two-thirds of the money expended on these institutions [public libraries] is expended in catering for the tastes of those loungers whose reading is confined to light novels, magazines, and *ana*.

Perhaps something might be said even for "light novels, magazines, and *ana*." But the Chairman of the Westminster Committee meets the allegation directly and definitively:

The expenditure of the City's libraries during the past year upon new books was £1,060. Of this amount £68. 10s., or 6·46 per cent., was expended upon novels of the best kind, according to the judgment of your Committee and librarians. If we add the cost of binding these novels, of replacing old and worn-out fiction, and the amount expended upon magazines (of all kinds), newspapers and periodicals generally, and then compare with the total expenditure upon every-

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thing, we get nearly an identical proportion—6·49 per cent., *not* 66 per cent., as was assumed, without data, by Mr. Churton Collins. A study of the published reports shows that much the same ratio applies in the majority of public libraries.

It seems somewhat risky to speak about such matters at all if one "cannot speak from statistics."

At the general session of the National Education Association of the United States, President Z. X. Snyder, of the Normal School, Greeley, Colorado, expounded "Our Educational Creed" on the basis of a baker's dozen of theses. These were:

(1) That the application of the doctrine of evolution is fundamental in the interpretation of an individual and his education. "All education is an application of the principle of evolution." (2) That an individual is an involution of possibilities—a composite potential. "The child is a concentration of the ages." (3) That the education of an individual is the evolution of the possibilities within him—an unfolding of the potential. (4) That the possibilities in individuals are variable, no two being the same. (5) That the biological principle that function precedes structure is equally true in the educational world. (6) That true socialization of an individual means to transfigure his individual initiative into mutual aid, or humanity. (7) That a child is born with the instinct and impulse to know and to think and to participate with his fellows, and that the object of his training is individual, the aim social, and the end civic. (8) That the external sources of education are Nature, Mind, and Spirit. (9) That learning is expressing, thinking, feeling, knowing. (10) That the function of the school is to individualize, socialize, and civilize the individual. (11) That the public school system should be the most democratic of our institutions, and the most efficient for the education of the children, for the elevation of the homes, for the solution of municipal, State, and national problems. (12) That the free public-school system ought to extend from the kindergarten to a great national university inclusive. (13) That the school teacher should be trained academically and professionally. "Nothing can take the place of scholarship"; and "professional training is the adjustment of scholarship to the education of the child, the people, and the State."

The full exposition, which is thoughtful and elevated, is published in the *School Journal* of July 16. The bare heads, however, may be usefully compared with current conceptions more or less definitely formulated or mooted among ourselves.

SUMMARY OF THE MONTH.

The Education (Local Authority Default) Act provides that:—

(1) The Board of Education, without prejudice to their right to take any other proceedings, may, if they are satisfied that it is expedient to do so on account of any default of a Local Authority in the performance of their duties as affects any elementary school (*a*) make orders for recognizing as managers of that school any persons who are acting as managers thereof, and for rendering valid any act, thing, payment, or grant which in the opinion of the Board might otherwise be invalid by reason of the default of the Authority, and every such order shall have effect accordingly; and (*b*), if it appears to the Board that the managers of that school have, for the purpose of maintaining and keeping efficient the school, incurred any expenses for which provision should have been made by the Local Education Authority, pay to the managers such amount in respect of these expenses as in the opinion of the Board was properly incurred.

(2) Any sums paid by the Board of Education under this Act shall be a debt due to the Crown from the Local Education Authority, and, without prejudice to any other remedy, may be deducted from any sums payable to that Authority on account of Parliamentary grants.

(3) Any order or payment may be made under this Act as respects matters occurring whether before or after the passing thereof.

The Council of the Evangelical Free Churches of Birmingham and District have memorialized the members of the Birmingham City Council on the transfer of certain pupil-teacher centres to the Council. They had learnt that the Roman Catholics were willing to transfer the management of their centre to the Council on the following conditions:—

(1) That a joint Committee shall be appointed; such Committee to consist of persons partly nominated by the Council and partly by the Trustees.

(2) That the entire teaching staff shall be Roman Catholics.

(3) That the religious instruction and training of these teachers shall be retained by the Roman Catholics.

They also learnt that the Anglicans were willing to transfer their pupil-teachers to the Council's centre on the following conditions:—

(1) That they have the privilege of teaching their distinctive Church doctrine to the pupil-teachers.

(2) That such teaching shall be given on certain days and in school hours and by a teacher whom they approve of, or appoint, and whom they will, if necessary, remunerate.

The Council regard the agreement of the City Council to both these sets of conditions as "extremely reactionary," and say that, "for the first time in the history of popular education in this city, they have committed themselves to a distinctly sectarian policy;" and they protest "in the interests of education and of civil and religious liberty." They contend for "a truly national system of education, having training institutions free to all alike and without any religious tests and disabilities."

Sir George Kekewich writes some startling things about certain denominational schools in the North of England (*Daily News*):

A few weeks ago I visited a school building in one of the great cities of the North of England, which should have been condemned at any time after the passing of the Act of 1870. It was not merely old, but grossly insanitary and inconvenient for teaching purposes. But the inspector had passed it year after year. He was a man in whom I had always placed implicit confidence, and I wondered why he had allowed the school to exist. Then I remembered that under a former Tory Government the same inspector had condemned a number of schools in the same city, which were actually held in basements partly or wholly underground, which were incapable of proper ventilation or lighting, and utterly unfit for school purposes. I supported the condemnation. But when it became known a deputation, politically important and denominationally influential, quickly arrived at the Education Department, and the then heads of the Department gave way. Most of the basements continued to be recognized, though in some cases for a reduced number of children. Some of them, no doubt, are still providing what the managers are pleased to call "education." The inspector could hardly be blamed if he omitted subsequently to condemn buildings which, bad as they might be, were at all events above ground. I have no hesitation in saying that I would infinitely rather see the children running the streets than attempting to learn in the school I visited, or, for that matter, in hundreds of other schools throughout the country, which have been constantly and consistently spared on account of the managers' pockets and of denominational instruction.

Dr. Macnamara thinks that "nationally it is the most criminal profligacy to allow so many of the children of the poor to struggle into adult life as they are doing," and that children's stomachs ought to be put in reasonable working order to support the work in school. He would start a reformation with providing the mid-day meal. Thus:

My plan is an adaptation of the Parisian *Cantine Scolaire* system. Year by year the municipality of Paris provides some eight millions of meals for its school children. These cost about £70,000. The sale of tokens realizes about £16,000; voluntary contributions about £14,000; and the rest—something like £40,000—comes out of the rates. Assuming that London has three times as many needy children as Paris, my scheme would cost some £120,000, or about three farthings in the £ on the rates. The question, therefore, is, Shall the school rate remain at 1s. 2d. (its present level) with the certain knowledge that much of it is being thrown away because of the unfit condition of the children, or shall we make it 1s. 2¾d., and thereby give young London a real chance of becoming a fit heritor of Britain's greatness?

He is careful to point out that he is "all against lessening what is called parental responsibility." In the case of the drunken, thriftless, and self-indulgent, he "would feed their children and then promptly proceed against them with all the rigours of the law to recover the cost," by a slight modification of the Education Act, or of the Cruelty to Children Act.

At the Sanitary Congress recently held in Glasgow, Dr. Elizabeth Pace, referring to the difficulties in the way of anything like a complete physical training in the elementary schools, pointed out that in the poorer schools the children were often tired when they came to school, having already done a certain amount of work at home; they had probably had insufficient sleep, and often insufficient food. If, however, children were too

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tired to take part in daily drill and exercises, and were not well enough fed to take part in games, they were not fit to be taught any lessons. Then in the better schools there was the great difficulty of want of time. It was a very anomalous condition of things that children in industrial schools should be better off in this respect than children of poor but respectable parents. The fault did not lie with the teachers, but in the overwhelming burden of work laid upon the children by the Code. A Code that would give a daily programme of half-an-hour's gymnastics and half-an-hour's spontaneous play in the school curriculum would be the greatest boon, not only to the children's bodies, but to their minds. Miss Alice Ravenhill sketched out the lines of training in physiology and hygiene which experience had shown to be of service in the management of schools. The importance to health and symmetry of right posture in childhood was selected as a practical example of the value of such knowledge, the points being emphasized by a series of illustrations photographed from life. The evils of faulty positions in standing and sitting were dealt with in detail; suggestions were made for their amelioration; and the responsibility of Local Authorities, teachers, and pupils was emphasized. Mr. Allan Tuke, M.B., read a paper on "Physical Training as a Branch of School Hygiene," pointing out that the objects to be aimed at were to raise the standard of health, and hence increase the power of resistance to the organisms of disease, to assist in the treatment of distinctly pathological conditions, and to aid the development of the child in structure and function. Mr. J. F. Butler-Hogan, B.A., M.D., read a paper on "School Hygiene: a Plea for the Compulsory Teaching of the Elementary Principles of Hygiene in all Public Schools, and a brief Outline of what might be taught." Other papers dealt with the importance of "hygienic school desks and seats."

In reply to Mr. Wharton, M.P., who asked for the relative proportion of the cost of elementary education in England and Wales borne by local and Imperial funds during the last three years, Sir William Anson stated that the total expenditure, so far as elementary education, otherwise than for buildings and for administration, is concerned, was, for 1899–1900, £12,045,000; in 1900–1901 it was £12,557,000; and, in 1901–1902, £13,005,000. The Board have at present no collected figures as to the amounts expended by Local Education Authorities since the Act of 1902 came into operation, but the Imperial contribution has been increased by £1,248,000. If, says Sir William Anson, the expenditure from other than Imperial sources were remaining the same, the proportion of the total expenditure borne by Imperial funds would, owing to the increase of the Exchequer grant given in 1902, have been increased from 63·6 per cent. to 73·2, and the burden to be borne by local funds would have been decreased from 36·4 per cent. to 26·8, so that the Exchequer would be bearing practically three-quarters of the burden of maintenance of public elementary schools. As, however, most of the Local Authorities are quite properly improving the education in their schools, and expending somewhat larger sums than were before spent from sources other than Imperial funds, it is not possible at present to state the exact proportion now borne by Imperial and local funds respectively on maintenance, but there can be no doubt that the Exchequer still bears considerably the larger share of this burden.

The British Science Guild, of which Sir Norman Lockyer is President, has been formed, on a suggestion he threw out in his Presidential address to the British Association last year, to insist on the importance of applying scientific methods to every branch of the affairs of the nation. The objects are thus enumerated:

(1) To bring together as members of the Guild all those throughout the Empire interested in science and scientific method, in order, by joint action, to convince the people, by means of publications and meetings, of the necessity of applying the methods of science to all branches of human endeavour, and thus to further the progress and increase the welfare of the Empire.

(2) To bring before the Government the scientific aspects of all matters affecting the national welfare.

(3) To promote and extend the application of scientific principles to industrial and general purposes.

(4) To promote scientific education by encouraging the support of Universities and other institutions where the bounds of science are extended or where new applications of science are devised.

Diplomas in Education have been issued by the Delegacy for the Training of Secondary Teachers, Oxford, to the following persons:—A. D. H. Allan, M.A. Oriel; C. I. Evans, B.A. St. John's; A. G. Jenkinson, M.A. Brasenose; C. H. Lea, B.A. non-collegiate; W. G. S. Thornton, B.A. Balliol; F. W. Keeling, B.A. London University; H. B. Widdows, M.A. Queens' College, Cambridge; Charlotte S. Banks, Royal Holloway College; Dorothy C. Earle and Mary Hart Davis, Newnham College, Cambridge; Catherine Hawthorne, B.A. London University (University College, Aberystwyth); Ethel M. Hinton, B.A. London University (Royal Holloway College and Westfield College); Janet Vernon Harcourt, Girton College, Cambridge.

The summer vacation school at the Passmore Edwards Settlement, Tavistock Place, the idea of which was borrowed from the United States by Mrs. Humphry Ward, and first put in operation here in 1902, was successfully reopened this year. The first day's attendance was nearly nine hundred. The children are taught to play with energy and good temper, and get some inkling of housewifery and cookery (for girls), woodwork (for boys), ambulance work, Nature study, brush work, drawing, and swimming.

At Manchester a country school for town children is in course of organization. It is to be open from April to September (excepting the midsummer holiday period), and will give some eight hundred children a fortnight in the country. A corrugated-iron building, with dormitories and dining-hall to accommodate eighty children, has been erected at Knolls Green, in Cheshire, on about four acres of land, with the sanction and approval of the Education Authorities. Relays of children, boys and girls alternately, may be sent with their teachers from the Manchester elementary schools for two weeks. The children will carry on a modification of their ordinary school work, giving much time to object-lessons on their rambles, to gardening, and to open-air pursuits of varied kinds. By permission of the Board of Education the children's attendances will be counted in their own schools. A trained nurse has been appointed matron. The total cost per child for the two weeks, including railway fare, will be 7s.

Last year the experiment was tried of a three weeks' course of lectures on Biblical study for women during vacation term at Cambridge. The success of the experiment led the promoters of the scheme to repeat it this year at Oxford, where even greater success was achieved, and it is hoped that the Vacation Term is now an established institution and will be held every summer alternately at Oxford and Cambridge. The students (about two hundred) stayed for the most part at Lady Margaret Hall, Somerville College, and St. Hugh's Hall, and the lectures, which were given at the High School, Banbury Road, were throughout of great interest. The lecturers included Prof. Ramsay (Aberdeen), Dr. Charles, Sir Oliver Lodge, Dr. Buchanan Gray, Prof. Percy Gardner, and the Rev. W. B. Inge. The three weeks' term, which began on July 25 and ended on August 13, was so arranged that such students as could not remain for the whole time might go for any one of the three weeks and yet hear complete courses.

The Board of Education have received from the French Government a notification of their intention to attach as temporary assistants to certain *lycées* a number of young English secondary-school masters, or intending schoolmasters who have undergone an approved course of training and hold some recognized diploma for secondary teachers. These assistants will not take any share in the regular work of the school, but will conduct small conversation groups under the direction of the *proviseur*. Two hours' work a day will be expected of them. The rest of their time will be at the disposal of the assistants, who will thus be able to pursue their own studies. The assistants will receive no remuneration, but will be boarded and lodged at the institutions to which they are attached. Candidates for such posts should forward their application to the Director of Special Inquiries and Reports, St. Stephen's House, Cannon Row, S.W., enclosing testimonials as to character, capacity, and teaching experience, and a medical certificate of health. It will also be necessary for each candidate to have a personal interview with the Director at his office, and, should any candidate have any special desire as to date of interview, it would be well to indicate it when forwarding the application.

The newly formed British Weights and Measures Association has for its objects the defence, standardization, and simplification of British weights and measures. The society will take up

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a strongly antagonistic attitude to the enforcing of the metre as a British standard, and it proposes eventually to introduce simplified and scientifically related weights and measures based upon existing British measures. Offices have been taken at 25 Victoria Street, Westminster, and Mr. George Moores, F.S.S., of Manchester, has been appointed Secretary.

At a recent meeting of the Joint Committees of the four Inns of Court and of the Law Society, appointed to consider proposals for the establishment of a School of Law, the following resolution, moved by Lord Macnaghten and seconded by Lord Lindley, was passed:—

That the Committees recommend to their several Inns of Court and to the Law Society that they join in a petition to His Majesty, in the form approved by the Committees, for a charter for a School of Law in the terms of the draft charter approved by the Committees.

Scholarships have been awarded at King's School, Canterbury, as follows:—Entrance Scholarships: H. Townshend (Dover College Junior School, and King's School, for mathematics), C. B. Simeon (King's School), B. H. Matheson (Mr. Mansfield, Bracknell), E. B. Nelson (Mr. Reynolds, Southbourne), L. C. Watson (Mr. Brooksbank, Aysgarth), J. Kettelwell (Mr. Olive, Wimbledon). House Scholarships: C. F. Freeborn (Mr. Jelf, Folkestone), D. K. S. Grant (Mr. Clark, Winchester), F. Kidd (Mr. Hardie Scott, South Croydon). Junior Foundation Scholarships: R. M. Gent, E. C. Linton, C. J. N. Adams, H. P. Sparling (for mathematics), all of the King's School. Probationer Foundation Scholarships: H. Townshend (Dover College Junior School and King's School), C. J. Galpin (Junior King's School), L. C. Watson (Mr. Brooksbank, Aysgarth), P. H. Nixon (King's School), B. H. Matheson (Mr. Mansfield, Bracknell), H. Parsons (Mr. Olive, Wimbledon), F. H. E. Martin (Mr. Martin, St. Leonards-on-Sea).

The Committee of Management of the Advanced Historical Teaching Fund state in their second report that the funds still in hand will only just provide for the continuation of the courses to the end of the third year (April, 1905). The Committee earnestly hope that in some way the excellent work now begun may be not only continued but further developed, and that a permanent school of training in historical research, embracing a much larger scope of study than is possible at present, may be established on a sound basis. What they are aiming at is a "post-graduate" school. Is there really no such thing "at present existing at any University in Great Britain"?

Yet another attempt has been made for the establishment of a Natural History Museum in Birmingham. A memorial on the subject has been addressed to the Lord Mayor, signed by representatives of the leading educational institutions, including the Principal of the University, the Chairman of the Education Committee, the Chairman of the Municipal School of Art Committee, the Head Master of King Edward's School, and the Head Master of the Municipal School of Art. It is felt that the acquisition by the Corporation of a large and central site opposite the School of Art, on which it is proposed to erect a building for the accommodation of certain municipal departments which have outgrown their present premises, affords an opportunity for including in the building scheme a natural history museum.

The technical education movement in Northumberland, which is encouraged by the County Council, is producing (says the *Daily News*) some wonderful results. In many colliery villages there are mining classes in the evenings, with the result that large numbers of workmen have qualified for the First Class Certificates of Head Managers of Pits, and a considerable number of workmen still engaged with the pick and shovel have their Managers' Certificates.

Much regret is felt for the premature death of Dr. Gurney (August 13) on the Alps near Arolla, between the Roussette and Mount Dolin, apparently by an accidental fall of some 90 feet. To the public life of the North of England Dr. Gurney will be a very real loss, for, since he went to Newcastle-on-Tyne in succession to Dr. Garnett (now the L.C.C. educational expert), his influence has extended far beyond the doors of the College of Science. He was essentially a vigorous and breezy personality, with something of the sternness of the true pedagogue in class, but with an abundant flow of good spirits once the cap and gown were off. His rule at the Durham College of Science has been sound, and has greatly advanced the interests of an institution which is doing much to foster and develop the mechanical and engineering talent of Tyneside, and which promises ultimately to be the greatest strength of the old University of Durham.

We regret to record the death of Canon Charles Evans, in his eighty-first year. Fellow of Trinity, assistant master at Rugby under Dr. Tait, Head Master of Clifton (1862) and of King Edward's, Birmingham (1862–1872), he was one of the foremost schoolmasters of his time. His tenure of the King Edward head mastership was eminently distinguished.

UNIVERSITIES AND COLLEGES.

London. The Senate of the University and the Council of University College have now agreed on the text of the Bill for the incorporation of the college in the University. The Senate has decided that in future internal and external candidates for the Bachelor of Science Honours degree in botany, chemistry, physics, physiology, and zoology must produce note-books of their laboratory work, which may include a record of any research work in which they have participated. The entries in such note-books must be duly certified by the teacher (if any) and will be taken into account in estimating the qualifications of candidates, provided only that the research work be not allowed to take the place of such sound general knowledge as should be required from an Honours candidate.

In the case of candidates taking the School Examination (Matriculation or Higher Standard) with a view to School-leaving Certificates, the production of a birth certificate by each candidate will not now be insisted upon, but a declaration of the age of each candidate by the head master or head mistress will be accepted as sufficient.

The Preliminary Scientific Examination will, in future, be designated "The Preliminary Scientific Examination, Part I.," and the examination in Organic Chemistry for Medical Students will be designated "The Preliminary Scientific Examination, Part II." Six months must elapse between the examinations. Part II. will be held in January and in July. Medical students (internal and external) who have passed in Physics, or Chemistry, or Botany and Zoology, at the Final B.Sc. Examination, will be exempted from examination in the subjects they have already passed (but no exemption in Biology will be granted to such as have not passed in Botany and in Zoology, either at an Intermediate Examination in Science or Agriculture, or at the Final B.Sc. Examination). Such students, if they have passed in Chemistry at the B.Sc. Examination, will be excused Inorganic Chemistry in Part I. and also Part II. Candidates (internal and external) must take either Inorganic Chemistry and Physics together, or Biology, or all three subjects; but, if they fail in any one, they may be re-examined in that subject taken alone.

Revised Regulations for the B.Sc. degree by Research have been issued (*Gazette*, August 6).

Manchester. The first prospectus of the Faculty of Theology of the University of Manchester has just been issued. Lectures begin on October 4. There are no tests for teachers or students, but "nothing will be introduced in the matter or mode of education in reference to any religious subject which shall be reasonably offensive to the conscience of any student." In addition to the teaching within the walls of the University, lectures in seven of the leading Manchester theological colleges will also be recognized to the extent of about half of the course. Besides Baptist, Independent, Moravian, Unitarian, and Wesleyan colleges, these include the Scholæ Episcopi and Ordsall Hall, the new theological school for graduates, which will be re-opened in October under the direction of the Bishop. There are twelve professors and lecturers, the majority of whom are also teachers in their respective denominational colleges. Among the members of the Advisory Board are the Bishop and Dean of Manchester and Prof. Sanday, of Oxford. A series of popular and inaugural lectures on Tuesday evenings will introduce the infant Faculty to the Manchester public.

Sheffield. Of the £170,000 required nearly £110,000 has been collected or promised. The Duke of Norfolk, who is named as the Chancellor of the new University, has given £10,000. All classes of the community have contributed

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freely. For example, the elementary-school teachers of Sheffield have undertaken to raise £1,000. During the last few months meetings have been held to rouse interest in the scheme among the workmen in the big works: the result has been the starting of a workmen's fund, made up of small weekly contributions. The women of the city have formed a Committee to raise £10,000 to endow a Chair. The claims of the scheme are being advocated in the large towns near Sheffield, such as Rotherham, Doncaster, Barnsley, and Chesterfield, on the support of which the stability of the University largely depends. It is essential to the success of the scheme that the public grants should be largely increased. The Sheffield City Council now supports the Technical Department of the College to the extent of about £5,000 a year, but has promised, if the charter is granted, to make a yearly contribution to the Arts, Science, and Medical Departments of a sum not exceeding the revenue of a penny rate, which is expected to produce some £6,700 a year, or about £5,000 more than the Council now pays to those departments. The West Riding County Council have set aside £6,000 a year for the Universities in Yorkshire. This sum has not yet been divided between Leeds and Sheffield. In addition, it is anticipated that the Derbyshire County Council, as well as some of the surrounding Local Authorities, will come to the rescue.

Belfast—Queen's College.

The report of Queen's College, Belfast, for 1903–4 states that there has been a continued and noteworthy advance in the number of students. The numbers of entrants in Medicine were higher than in any other medical school in Ireland with the single exception of the Catholic University School of Medicine, Dublin, which showed an entrance of three more students than those attending the Queen's College, Belfast. In the School of Law the numbers attending during the session just ended were exactly double those of the previous year. The School of Engineering also showed an increase. The number of lady students has still further advanced, the total number enrolled being 59. These were distributed over the Faculties of Arts, Medicine, Law, and Music, and not a few of them gained valuable scholarships and prizes. It is pointed out that this was the first University College in Ireland to admit women to its class-rooms. The Council has instituted a series of new scholarships for the special encouragement of modern literary studies. (See "Current Events—Scholarships.")

Cork—Queen's College.

The report on Queen's College, Cork, for 1903–4 contains several complaints. Dr. Moore, Lecturer in Pathology, has been very successful in teaching this subject, and devotes his whole time to it; yet he receives no salary. Again, there is a decided indisposition on the part of medical students to read for Honours in the Royal University, because the proportion of medical examiners from Cork is inadequate (one from Cork to three each from Belfast and Dublin). It is not suggested that the Cork students are treated unfairly, but that they are disheartened by this arrangement. Once more, the claims of the college to an examinership in chemistry in the Royal University have not yet been satisfied. However, the progress of the college was marked. The number of matriculated and non-matriculated students during the session 1903–4 is as follows, the figures in parentheses being those for the previous session:—Roman Catholics, 143 (120); Established Church and Church of Ireland, 66 (57); Presbyterian, 5 (4); Wesleyan, 9 (7); other denominations, 2 (2)—total, 225 (190).

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

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To the Editor of "The Educational Times."

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CURRENT EVENTS.

Fixtures.

THE French lecture of the Société Nationale des Professeurs de Français en Angleterre will be delivered at the College of Preceptors on September 24, at 4 p.m. Lecturer and subject not yet settled.

* * *

THE Lampeter Lectures to clergy this year will be given during the week September 5–10 by Principal Bebb, Dr. Bigg, Dr. Knowling, the Rev. C. Harris, and others.

Honours.

THE University of Cambridge, on the occasion of the visit of the British Association, has conferred the following honorary degrees :—

Litt.D.: on Panagiotis Kabbadias, Ephor-General of Antiquities, Greece.

Sc.D.: on Johan Oskar Backlund, Director of the Central Nicolas Observatory, Poulkovo; Henri Becquerel, Professor of Physics, Ecole Polytechnique, Paris; Julius Wilhelm Brühl, Professor of Chemistry, Heidelberg; Adolf Engler, Professor of Botany, Berlin; Paul Heinrich von Groth, Professor of Mineralogy, Munich; Albrecht Kossel, Professor of Physiology, Heidelberg; Henry F. Osborn, Professor of Zoology, Columbia University, New York; Nikolaas Gerard Pierson, sometime Prime Minister of the Netherlands; Vito Volterra, Professor of Applied Mathematics, Rome; Sir David Gill, K.C.B., F.R.S., H.M.'s Astronomer at the Cape of Good Hope; Alfred William Howitt; Sir Norman Lockyer, K.C.B., F.R.S., Director of the Solar Physics Observatory, South Kensington; Major Percy Alexander MacMahon, F.R.S., late R.A., formerly Professor of Physics, Ordnance College, Woolwich; Sir William Ramsay, K.C.B., F.R.S., &c., Professor of Chemistry, University College, London; Arthur Schuster, F.R.S., Professor of Physics, Victoria University of Manchester; Sir William Turner Thiselton-Dyer, K.C.M.G., F.R.S., Director of the Royal Botanic Gardens, Kew.

* * *

PRESIDENT HARPER and Dean Judson, of the University of Chicago, have been decorated by the German Emperor with the Order of the Red Eagle and the Order of the Crown respectively, in recognition of the honours shown by the University to German scholarship and German scholars.

* * *

THE University of Philadelphia has conferred honorary degrees on Sir Frederick Treves, Bart., and M. Jusserand.

Endowments and Benefactions.

THE Drapers' Company have discharged the debt of University College, London, to the bankers to the amount of £30,000. The Treasurer has received from Messrs. Wernher, Beit, & Co. their cheque for £10,000 promised to promote the incorporation of the College in the University—an object for which some £18,000 is still needed.

* * *

MR. E. TALBOT BAINES has notified his intention to give £10,000 to Liverpool University towards a Chair of English, in memory of his late brother, Mr. T. C. Baines, of Alexandria.

* * *

THE Court of Common Council has accepted the offer of an anonymous donor to provide for one year a course of lectures by experts in the several branches of music, so as

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to aid students of the Guildhall School going up to any of the Universities for a degree in Music.

Scholarships and Prizes.

THE Education Committee of the Victoria League offers 1 prize of £10, 3 prizes of £5 each, 2 prizes of £2. 10s. each, and 6 prizes of £1 each, for written lectures (about 3,000 words each) on the following subjects (the prizes to be awarded in December):—(1) Madras Presidency, (2) Bombay Presidency, (3) Calcutta and the Ganges, (4) North-West Frontier and the Punjab, (5) Egypt, (6) The Soudan, (7) Zanzibar, British East Africa, and Uganda, (8) Nigeria and the West African Colonies and Protectorates, (9) Quebec and Ontario, (10) Canadian Maritime Provinces and Newfoundland, (11) Manitoba and the North-West, (12) British Columbia. The lectures should be concisely and graphically written from personal knowledge of the country. The MSS. must be type-written, and should reach the Secretary of the Victoria League, Dacre House, Victoria Street, S.W., not later than November 1.

* * *

MAGDALEN COLLEGE, OXFORD, offers one or more demyships in History, and one or more demyships in Natural Science, £80 each. Examination begins December 13. Age not to exceed nineteen on December 21. Exhibitions may also be offered in the same subjects to candidates under twenty-one. No set books or subjects. Particulars on written application to the President, or to the Tutor in Natural Science.

* * *

MRS. WILLIAMSON, of Liverpool, has founded a bursary in the University of St. Andrews for a student for graduation in Honours, in memory of her late husband, Mr. Stephen Williamson, M.P. for St. Andrews District Burghs, 1860–65.

* * *

QUEEN'S COLLEGE, BELFAST, proposes to offer for competition, during the next three sessions, 12 scholarships in modern literary studies, £24 each for 1 year.

* * *

A RESEARCH STUDENTSHIP, £100 a year for 2 years, is offered by the London School of Economics and Political Science. Examination, October 11–12.

* * *

THE League of the Empire proposes to found 5 "Federal Scholarships"—2 of £50, 1 of £40, 2 of £30—tenable for three years at any recognized University in the Empire.

Appointments and Vacancies.

IN University College, London, Dr. Shuckburgh has been appointed Lecturer in Ancient History, and Mr. D. S. Maccoll Lecturer in the History of Fine Art.

Dr. F. J. Poynton has been appointed Sub-Dean of the Faculty of Medicine, in succession to Prof. Thane resigned. The Council have sent the following resolution to Prof. Thane:—

That the Council desire to place on record their sense of the great services which Prof. G. D. Thane has rendered to the College and to the Faculty of Medicine during the twenty-one years he has held the office of Sub-Dean to the Faculty of Medicine.

* * *

DR. WILLIAM OSLER, M.D., F.R.S., &c., Professor of Medicine in Johns Hopkins University, Baltimore, has been appointed Regius Professor of Medicine in the University of Oxford, in succession to Sir J. S. Burdon-Sanderson.

* * *

DR. T. W. RHYS-DAVIDS, Ph.D., LL.D., Professor of Pali and Buddhist Literature in University College, London (since 1882), Secretary to the Royal Asiatic Society (since 1887), and Fellow of the British Academy, has been appointed to the new Chair of Comparative Religion in the University of Manchester.

DR. J. LORRAIN SMITH, M.A., M.D. (Edin.), Professor of Pathology in Queen's College, Belfast, has been appointed to the Chair of Pathology and Pathological Anatomy in the University of Manchester.

* * *

THE Chair of Mathematics in Aberdeen University is vacant through the sudden death of the Rev. George Pirie, M.A., LL.D., formerly Fellow, Mathematical Lecturer, and Tutor of Queens', Cambridge.

* * *

IN the University of Leeds, the following appointments have been made:—

Mr. Charles Edwyn Vaughan, M.A., Professor of English Language and Literature in the Durham College of Science, Newcastle-on-Tyne (since 1899), to be Professor of English Language and Literature;

Dr. Albert S. Grünbaum, Lecturer in Experimental Medicine in Liverpool University and Director of the Liverpool Cancer Research, to be Professor of Pathology and Bacteriology, in place of Prof. Trevelyan, who retires in September;

Dr. George Wilson to be Lecturer in Civil Engineering; and

Miss Hannah Robertson, B.A., Head of the Training Department, Bedford College, London, to be Mistress of Method, in room of Miss Emmerson, resigned.

* * *

DR. WILLIAM PALMER WYNNE, D.Sc. (Lond.), F.R.S., F.I.C., senior Honorary Secretary of the Chemical Society and Professor of Chemistry in the School of Pharmacy of the Pharmaceutical Society, has been appointed to the Firth Chair of Chemistry in University College, Sheffield, in succession to Prof. Carleton Williams.

* * *

MR. MATTHEW A. PARKER, B.Sc., Glasgow, has been appointed Professor of Chemistry in Manitoba University.

* * *

SIR ROWLAND BLENNERHASSETT, Bart., LL.D. (R.U.I.), D.Sc. (Louv.), has resigned the Presidency of Queen's College, Cork, which he has held since 1897.

* * *

DR. ALFRED TINGLE has been appointed Professor of Chemistry at the University of Shantung.

* * *

DR. G. NORMAN MEACHEN, M.D., B.S. (Lond.), M.R.C.P., M.R.C.S., has been appointed Instructor and Lecturer in Physiology at the Morley Memorial College, Waterloo Bridge Road.

* * *

THE Principalship of the Durham College of Science is vacant by the death of the Rev. Henry Palin Gurney, M.A., Hon. D.C.L., who held the office since 1894.

* * *

FATHER HOOK, of Neath, has been appointed Principal of Holywell R.C. College.

* * *

MR. W. E. DALBY, M.A., B.Sc., M.I.C.E., M.I.M.E., Professor of Mechanical Engineering and Applied Mathematics at the City and Guilds Central Technical College, Finsbury, has been appointed Professor of Civil and Mechanical Engineering at the same college, in succession to Prof. W. C. Unwin, resigned.

* * *

MR. E. R. BURDON, B.A., Sidney, has been appointed Assistant Curator of the Botanical Museum, Cambridge.

* * *

DR. G. SENTER has been appointed Lecturer in Chemistry at St. Mary's Hospital Medical School.

* * *

MISS M. STOKES, Ph.D., has been appointed a Demonstrator in Botany in Manchester University.

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THE head mastership of Fauconberge School is vacant through the sudden death of the Rev. Percy Elliott Bateman, M.A.

* * *

THE REV. FRANCIS G. CHANNON, M.A., Fellow of Corpus Christi College, Cambridge, and assistant missioner at the Corpus Christi Mission, Camberwell, has been appointed an Assistant Master at Eton.

* * *

MR. A. M'CAW, M.A., Head Master, Golspie Public School, has been appointed Principal of the Harrismith District Schools, Orange River Colony.

* * *

Mr. E. N. MARSHALL, house master and senior classical master at Loretto, has succeeded the Rev. W. E. Inchbald as Head Master of Queen Elizabeth's School, Kingston. Mr. Inchbald resigns after twenty years' tenure.

* * *

MR. E. H. BLAKENEY, M.A., Head Master of the Borlase School, Marlow, has been appointed Head Master of King's (Cathedral) School, Ely.

* * *

MR. GEORGE HARE, Head Master of Swaffham Grammar School, has been appointed Head Master of the Paston Grammar School, North Walsham, in succession to the Rev. Henry Wimble, M.A., resigned.

* * *

MR. T. W. HOPE, M.A. Trinity College, Cambridge, has been appointed second master at St. Olave's.

* * *

MR. ERNEST H. FORSYTH, M.A. (Aberd), classical master in Oban High School, has been appointed senior assistant classical master in Dundee High School; and

Mr. James S. Stalker, M.A. (St. Andr.), assistant master in Bo'ness Academy, has been appointed junior assistant classical master.

* * *

MR. JOHN F. ANDERSON, M.A. (Aberd.), recently assistant to the Professor of Logic in Aberdeen University, has been appointed Classical Master in Keith Schools.

Literary Items.

THE Clarendon Press will issue early in September the first eight volumes of a new series—the "Oxford Modern French Series," edited by Léon Delbos, M.A., Instructor in French in H.M.S. "Britannia." It will include narratives of travel, biographies, and essays, as well as dramas, romances, and short stories—all by writers of classical rank. The notes will deal mainly with literary and historical points. The series is primarily intended for fairly advanced students, but will also suit general readers. The price will range from 1s. 6d. to 2s. 6d. a volume.

* * *

ANGLERS will be glad to learn that a new edition of Mr. Earl Hodgson's "Trout-Fishing" will soon be issued by Messrs. A. & C. Black. It will contain a new chapter on "The Theory of the Dry-fly," and an appendix giving a list of dressings of the lures in "The Model Book of Flies," which, reproduced in colour by Mr. Mortimer Menpes, has attracted considerable attention.

* * *

MESSRS. DENT announce the early addition of seven fresh volumes to the "Temple Dramatists" series. Dekker's "Old Fortunatus" and Massinger's "A New Way to pay Old Debts" are to be issued at once, and the rest will follow in autumn.

* * *

MR. HENRY FROWDE will presently issue "The Preparation of the Child for Science," by Mrs. M. E. Boole, whose "Lectures on the Logic of Arithmetic" we recently noticed very favourably.

MR. G. W. BACON announces the completion of his new "Reference Atlas and Gazetteer of the British Isles," brought up to date, and including the results of the last census. It contains 70 double-page maps, 50 of which are devoted to England, besides diagrams and index.

* * *

MR. R. F. CHOLMELEY contributes to the *Independent Review* for August "A Complaint of Public Schools"—a biting and charming article. "Is it likely that the well-to-do classes of England will ever, in considerable numbers, take the trouble to look into the education of their children, or that, if they do, they will have the wit to find out what is wrong with it?"

* * *

WE congratulate *Occasional Papers*—"a magazine born into the world from a sheer love of literature rather than a desire for pecuniary profit"—on its fourth (July) number. Mr. James Baker contributes a rousing paper on "The Future of English Education" and Judge Willis a good critical appreciation of "The Youthful Burns."

* * *

A SUPPLEMENT to the June number of the *Educational Review* of Madras (London: Clive) contains the text of the Indian Universities Act, 1904, and the speeches on the Bill in the Legislative Council of the Viceroy.

* * *

IN the *Leisure Hour* for August, Mr. David Williamson gives a very interesting account of "A University built in a Year"—Wooster University, Ohio—with effective illustrations. The University had been burnt down in the end of 1901.

* * *

Child Life for July is a strong number, containing several excellent papers read before the Froebel Society. Prof. Sadler and Mr. Thiselton Mark are among the writers; and Mr. J. H. Badley discusses "Co-education in the Secondary School."

* * *

AT the London School of Economics and Political Science the Hutchinson Medal for the best piece of research during the year has been awarded to Miss C. A. J. Skeel, D.Lit., for her thesis on "The Council in the Marches of Wales: a Study in Local Government during the Sixteenth and Seventeenth Centuries."

General.

A NEW Technical Institute and Public Library has been opened at Eastbourne by the Duchess of Devonshire. The Duke of Devonshire gave the site, and Mr. Carnegie sent £10,000 towards the library.

* * *

ON occasion of the opening of a new Library at Keighley and the transfer of the Mechanics' Institute to the Corporation, the Duke of Devonshire received the freedom of the borough. Referring to the Education Act, he said:

In their infant and elementary schools they were able to secure for the children as good an education—and, he believed, a more practical education than—the children of the rich could have in the nursery or in the preparatory school; and, although, when they left the elementary school, their children might not be able to learn Latin and Greek or football or cricket at one of the great public schools, they would, at the municipal school—for the efficiency of which the corporations had now the responsibility—have the means of a training in their own language and literature—perhaps in some other foreign language, in some branch or branches of science, in some branches of art, and in some form of manual instruction—a training which would fit them, which would add as much in the form of strengthening their intellectual faculties and in the form of strengthening their characters in preparing them for the work of their future lives as was open to the children of the richest and the highest in the land. If that was not a time which had yet arrived, it was a time which, he confidently expected, was not far distant.

* * *

A PARTY of over a hundred Belgian teachers, under the direction of the Fédération Scolaire, paid a brief visit to London.

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EDUCATIONAL SCIENCE AT CAMBRIDGE.

MEETING OF THE BRITISH ASSOCIATION.

BISHOP PERCIVAL'S PRESIDENTIAL ADDRESS.

THE Educational Science Section of the British Association, though but four years old, "has proved an infant Hercules, and already assumed a commanding position in the Association" (*Times*). The Bishop of Hereford (Dr. Percival) was President. In his presidential address, he referred to Plato's and Milton's definitions of "true education," and summed up the matter thus:

TRUE EDUCATION.

True education, then, aims at cultivating the highest and most efficient type of personality, men not only appropriately and technically equipped for their professional business, but endowed with the best gifts and inspired with high purposes, men who desire to follow the more excellent ways and to lead others in them, who love knowledge, truth, freedom, justice, in all the relations of life, whether individual or social, men marked by sense of duty and moral thoughtfulness, public spirit, and strength of character. Such an education is the true basis of individual and national welfare, and experience has abundantly shown how necessary this is to save men from distorted views of history, from wrong conceptions of patriotism and public duty, from mistaken aims and disastrous policy. Scientific consideration of the subject will of course deal largely with such details as the relative claims of the humanist and the realist, subjects and methods of instruction, the correlation of different grades of education, the adaptation of this or that system to special needs, and so forth; but through all this these fundamental requirements of the true education, as placarded before us by Plato or by Milton, must always hold the chief place, and all others must be kept in due and conscious subordination to these.

The element of personality being thus pre-eminently vital, there might be danger from rigid scientific treatment.

NO DANGER FROM SCIENTIFIC METHOD.

The most eminent psychologists, the critics told us, were beginning to recognize the danger, and they bid the educator beware of science which had a great deal to say about mental processes, but took too little account of the emotions and the will, and seemed inclined to forget that men were personalities, and not plants or trees or machines, and that boys would be boys. The combination of a living and fruitful experience, these critics asserted, with systematic, organized scientific methods and processes was more difficult in education than in any other realm of knowledge, because the data were so complicated and so subtle and elusive. For himself his attitude in the whole matter must of necessity be a humble one. For many years of his life he was a teacher, but entirely untrained, or rather self-taught, relying for instruction and guidance entirely on his own reading, observation, experience, and practice. As regards the critics whose views he had endeavoured to express, he said at once that he did not go with them, because he was profoundly convinced that our English education needed the influence of more light and more thought from every quarter, and especially from those who were familiar with scientific methods. Moreover, he hailed the application of scientific intelligence and scientific methods to this subject, because, looking back, he was profoundly conscious that he would have done his own educational work far less imperfectly if, in his youth, he had undergone any rational scientific illuminating preparation for it.

"The want of the idea of science, that is, of systematic knowledge," said Matthew Arnold, some thirty-six years ago, "is, as I have said again and again, the capital want at this moment of English education and English life. Our civil organization (including our education) still remains what time and chance have made it." It is a surprising thing, said Dr. Percival, that, in an age of unusually rapid scientific development, this should be, in the main, still true of a great part of our English educational system.

HOW WE LAG BEHIND.

There is the lack of any systematic preparation for the business of teaching which still prevails throughout our middle and upper class education, although here in Cambridge and in Oxford some excellent pioneer work is being done in the training of teachers. There is the general lack of interest in education still so noticeable in a great deal of English society of all grades, the spirit of indifference to it, and even the tendency to depreciate the intellectual life. There is the excessive influence of tradition and routine on our great schools and universities, and in some quarters an inert or suspicious conservatism. There is throughout our middle-class education a state bordering on chaos, a country largely unexplored, a mixture of things good and bad, involving a vast amount of wasted opportunity and undeveloped faculty. Even in elementary education, which has received the largest share of public attention, there is much that needs to be done in a more thoughtful and scientific spirit. Party politics have to be eliminated as far as possible, especially ecclesiastical politics. The fitness of a great deal of the teaching to the special needs and requirements of the children has to be considered afresh. The tendency to overlook the interests and the attainments of each individual child has to be checked. Much, it is true, had been done in almost every part of the educational field during the last half century, but not nearly so much as ardent friends of education anticipated forty years ago. I have already quoted some significant words from Mr. Arnold's illuminating report on the schools and Universities of the Continent as he saw them thirty-seven years ago. If that report had been turned to immediate practical account at the time, if some English statesman, like Wilhelm von Humboldt, had been enabled with a free hand to take up and give effect to Mr. Arnold's chief suggestions, as Humboldt and his colleagues gave effect to their ideas in Prussia in the years 1808 onwards, the advantage to our country to-day would have been incalculable.

Turning to practical problems confronting us to-day, the Bishop first dealt with

THE PROBLEM OF PHYSICAL HEALTH.

The growth of crowded city populations and the conditions under which multitudes have for at least two generations been growing up and passing their lives in our great cities has set us face to face with the very serious preliminary problem of physical health. On the one hand, in our absent-minded way, we have allowed these generations of town-dwellers, to say nothing of rural villagers, to grow up and live under insanitary conditions which have inevitably produced a physically degenerate, enfeebled, and neurotic race of men and women. On the other hand, in the upper and middle classes, we have been sedulously cultivating the taste for physical exercises, outdoor life, athletics, and sport, thinking nothing of such importance as the development of the body, admiring nothing so much as bodily prowess; carrying all this to such an extent that a natural and wholesome use of athletic exercise has been fostered into a sort of fashionable athleticism, with all its parasitic professionalism, possessing both soul and body. Are we not then in some danger of drifting into the ways of the Greeks, not in their best days, but in their decadence, and of the Romans under the demoralizing influences of the Empire?

With regard to the elementary school, our system does too little to draw out and stimulate the faculties or to form the tastes of each individual child.

ELEMENTARY EDUCATION.

Classes are still, in many cases, far too large. The system of block grants, being inadequately safeguarded or supplemented by inducements to individual children to apply and prepare for certificates of merit or proficiency, however attractive it may be to inspectors and teachers, needs to be very carefully watched in the interests of individual children. The individual child requires the hope and stimulus of some personal recognition or distinction if its faculties are to be fully roused and its tastes properly cultivated. Moreover, the aid of scientific thought and experience is needed to bring both the subjects and methods of instruction into closer and more vital relationship with the environment of the children and with their practical requirements, and more weight has to be given to specific ethical teaching—that moral and spiritual training day by day which has for its end the development and strengthening of character and taste and issues in conduct, which is the greater part of life. And, seeing that it is of the essence of any rational or scientific system to avoid needless waste, it is time that our elementary education should no longer be left in its absurdly truncated condition, which allows a child's education to be stopped abruptly and finally at or about the age of twelve, when, in the nature of things, it should be only beginning. As things are at present, just when the parent of the upper classes is anxiously considering what school would be the best for his son, a vast number of the children of the poorer classes are left by the State to drift out into a wilderness where all things are forgotten. In this connexion, however, it is due to the Board of Education to take note of the reminders lately issued in the introduction to the new Code and the memorandum prefixed to the Regulations for the Training of Teachers.

In the sphere of secondary education there is much greater need of careful study and experienced guidance.

SECONDARY EDUCATION.

Our secondary education has by the Act of 1902 been handed over very largely to County Councils, excellent but heterogeneous bodies, and, for the most part, not only ignorant of educational needs, methods, and possibilities, but quite unaccustomed to their practical consideration—altogether unprepared and untrained for the responsible work now thrown upon them, and hampered by their besetting fear of the ratepayers. These County Authorities needed first of all to be themselves instructed and persuaded as to the right subjects for their schools, the co-ordination or proportion of subjects in any scheme to be encouraged, the methods of instruction, the sort of teachers to be appointed, the wisdom of spending public money on good education,

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as exemplified in other countries, like Germany, Switzerland, the United States, Denmark. In our rural districts, at all events, it might be said further that one of our first needs was to persuade the Local Authorities by some convincing proof that expenditure on popular education higher than elementary was a wise economy, and that their bread cast on educational waters would come back to them, not after many days, but very soon, and in their own homes. It would greatly expedite progress if the Government could and would offer more liberal secondary education grants to be earned by efficient schools, and initial grants towards buildings and scientific equipment, to be met by contributions from local rates or other local sources, public or private. . . . It would also stimulate our Local Educational Authorities if they could be more fully informed as to the practical advantages which had been derived from a practical system of popular education in such a country as the United States of America; and still more if they had set plainly before them the wonderful results derived by a poor country like Denmark during the last twenty-five years, and in the face of every disadvantage, from the system of education initiated by Bishop Grundtvig and taken up by the Government. The need of our middle classes, especially that of the farmer and tradesmen classes, was very pressing.

As for the public schools and the preparatory schools behind them (which "have now assumed a definite place in secondary education"):

Preparatory and Public Schools.

Some of the preparatory schools are very good, so far as the conditions under which they work admit of excellence; in others there is much room for improvement. Seeing how grave are the considerations involved, one of the things needed for the general improvement of our secondary education is that every private school, of whatever kind, be liable to public inspection and public report thereon; that a licence be required for every such school; and that the staff and their qualifications, and the remuneration given to each of them, the sanitary condition, suitability, and educational equipment of the premises, all be considered in connexion with the giving or withholding of a licence. As regards the curriculum, the subjects taught, and the proportion of time allotted to each, it has to be borne in mind that the schools are not free agents, but are dependent on the requirements of the entrance examination at the public schools they supply; just as those schools in their turn are dependent on the requirements of the university to which they send their pupils. As regards the public schools themselves, the points that invite attention would seem to be such as the following:—There is undoubtedly a great deal of waste owing to the poor teaching of untrained masters, who in some cases cannot even maintain reasonable discipline, and in many more have no real knowledge or mastery of the best methods of teaching their subject, be it linguistic, or historical, or literary, or scientific, and have not acquired that first gift of an efficient teacher, the art of interesting their pupils and drawing out their faculties and their tastes.

Training and Registration.

"It would, therefore, be reasonable, as it would certainly be stimulative and advantageous, to require that all masters should be bound to go through some system of well considered and serious preparation or training for the teacher's work, or at least a probationary period." "It should be made a rule that no master could be placed on the permanent staff until he was certified and registered as having fully satisfied this requirement and given proof of his efficiency." Dr. Percival, accordingly, urged the necessity and the advantage both of training and of registration. He also dealt with the importance of the matter of language teaching as against the grammatical discipline, and lamented the continued weakness of history teaching. He insisted specially on the cultivation of intellectual interests and tastes. Speaking of the duration of school life, he thought many boys would do better to go up to the University at sixteen or seventeen; and, comparing day schools and boarding schools, he preferred the former, at any rate when the boys came from good homes. He then passed to the influence of University requirements and endowments on school education.

The Universities and the Public Schools.

It would be equivalent to pouring a new stream of intellectual influence through our secondary education if Oxford and Cambridge were to agree on some such requirements as the following:—(1) In the matriculation examination (*a*) candidates to be free to offer some adequate equivalent in place of Greek; (*b*) an elementary knowledge of some branch of natural science, and of one modern language, to be required of all candidates; (*c*) a knowledge of some period of English history and literature also to be required of every candidate, and ability to write English to be tested; (*d*) the examination in Latin and any other foreign language to include questions on the subject-matter of any prepared books offered, some questions on history and literature, and translation of easy passages not previously prepared; (*e*) marks of distinction to be given for work of superior merit in any branch of this examination, as, indeed, of every pass examination conducted by the University. Candidates should not be excluded from residence before passing this examination, nor should they be required to pass in all subjects at the same time; but the completion of this examination would be the necessary preliminary to entry for any other examination required for a degree. (2) On the question of endowments and the minimizing of waste in the administration of them there was much to be said, and he would suggest for consideration—(i.) that, as a rule, open scholarships and exhibitions might be reduced to free tuition, free rooms, and free dinners in hall, or thereabouts; (ii.) that every holder of an open scholarship or exhibition whose circumstances were such that he needed augmentation should, on application, receive such augmentation as the college authorities considered sufficient; (iii.) that care should be taken to discourage premature specialization at school. For this end it should be required that no scholar should enjoy the emoluments of his scholarship until he had passed the matriculation examination described above; and a fair proportion of scholarships should be awarded for excellence in a combination of subjects. The Universities might also do good service in the way of stimulating secondary education, if some small proportion of their entrance scholarships were distributed over the country as county scholarships, on condition that the county contributed an equal amount in every case. In this way some equivalent for the endowments so cynically confiscated by the Education Act of 1902 might be recovered and used for the benefit of poor and meritorious students. Other reforms, which would be productive of valuable results, were the requiring from every candidate for a degree a knowledge of some portion of our own literature and history, and the encouragement of intellectual interests and ambitions by abolishing all purely pass examinations. The opportunity of winning some mark of distinction in this or that portion of what was now a pass examination would frequently rouse some latent ambition in an idle man, and transform the whole spirit of his work.

Dr. Percival concluded with the practical suggestion that "it might do a valuable service and supply one of our special educational needs, if the working committee of the section, enlarged by the addition of various representative persons, made it a duty to collect and publish year by year in succession a series of papers, the best that could be written by recognized authorities, on the chief branches of our English education, dwelling on its immediate and pressing needs, and how best to supply them. To do this the committee should set to work systematically, commencing in October with monthly meetings, and formulating, without delay, the scheme or series of papers to be prepared and presented to the next meeting of the Association."

A vote of thanks, proposed by the Vice-Chancellor, and seconded by Prof. Perry, was passed with enthusiastic cordiality.

From the papers on special subjects we quote from one that proved to be of quite exceptional interest. It was by Dr. J. de Körösy, Director of Municipal Statistics at Budapest, and consisted of a statistical comparison of

The Intellectual Power of the Two Sexes.

Dr. Körösy explained that the material of his statistics was drawn from observations made during the last twenty-seven years in the schools of Budapest, where, since 1873, a special report on the progress of each pupil had to be sent to the author's office. These individual reports (amounting latterly to sixty thousand per annum) represented together 808,350 cases; they related at first to the elementary schools (ages six to twelve years) only; later they included the higher elementary schools ("citizen schools," ten to sixteen years), and in the last years the grammar schools also. As to the general progress in the elementary schools, the test applied was the number of children who had to repeat their year's work instead of passing on to the next standard. Of 412,758 boys and 350,382 girls, 69,422 boys (16·8 per cent.) and 54,391 girls (15·8 per cent.) repeated their work. These figures showed a slight superiority on the part of the girls. If the divergence standard by standard were observed, the boys and girls were seen to be nearly level at first, but the advantage of the latter increased with age. Thus, in the first standard the percentage repeating the year's work was—boys 22·5, girls 22·2; in the second standard the percentages were 16·6 and 15·4; in the third standard, 16·3 and 13·8; in the fourth standard, 12·2 and 9·2; in the fifth standard, 9·8 and 5·6; and in the sixth standard, 4·7 and 2·7. As to special progress in the fourth standard of the elementary schools, in a total of 172,477 cases, the frequency of the best marks for boys and girls respectively was: in mother tongue, 23·6 per cent. and 32·3 per cent.; in arithmetic, 28·0 per cent. and 37·3 per cent.; and in geography, 29·2 per cent. and 36·9 per cent. With regard to the progress observed in the higher elementary schools, of 14,201 boys and 20,588 girls, 840 boys (6·2 per cent.) and 450 girls (2·2 per cent.) had to repeat their work. The frequency of the best marks in the fourth standard for boys and girls respectively was, in mother-tongue, 16·7 per cent. and 44·6 per cent.; in German, 12·2 per cent. and 39·2 per cent.; in

history, 20·9 per cent. and 47·3 per cent.; and in arithmetic, 10·8 per cent. and 35·3 per cent. The superiority of girls was, said Dr. Körösy, really puzzling here, especially in arithmetic. In this division, however, there were difficulties, for the female group was more selected than the male; the boys who followed the higher elementary classes, instead of entering secondary schools, were from a class less gifted than the ordinary, while the contrary was the case with the girls. This disturbing cause exercised greater influence in the grammar school, as only the most talented and most ambitious girls entered the Latin schools. Besides this, the system of teaching and examination was more favourable to the girls. Thus the elementary schools furnished the most trustworthy measure, especially where their attendance was, as in Hungary, compulsory. The results were all in favour of the female sex, but related only to children. Since not only in sciences, but also in poetry and (with the exception of the stage) in arts, the great work of human progress had been accomplished by the male sex, one was obliged to suppose that with the age of ripening the feminine intellect developed itself more slowly than the masculine, and that there was a turning point at which the intellectual activity of women seemed to be arrested.

Mr. Henry Hobhouse, M.P., read a paper on the relation of the Local Education Authorities to what was probably the most important factor in our educational progress at the present moment—

THE TRAINING OF OUR TEACHERS.

This has been recognized as a matter of national concern, not only by a formal resolution passed last March by the House of Commons, but by training being insisted upon as a condition of registration under the recent regulations. But the actual establishment of training colleges had *more nostro* long been left to private initiative, and the deficiencies which had naturally resulted were now under the Act of 1902 to be supplied by the action of the Local Authorities and not of the State. The object of the present paper was briefly to indicate the difficulties which beset local bodies in their endeavours to perform what was really a national task. It must first be noted that (taking County Councils and County Borough Councils only) there were some hundred and thirty Local Authorities for higher education in England and Wales. Some of these disposed of very small funds, considering the numerous and important objects of their expenditure, which included secondary and evening schools, scholarships, and technical classes of all kinds. In default of pressure from the Central Authority some of these Local Bodies would be slow to raise more money for the training of teachers. The Government, it would be said, offered liberal contributions, amounting, in the case of the larger training colleges, almost to the whole cost of maintenance. But it was the initial cost of establishing new institutions with expensive buildings and equipment which was likely to prove most formidable to the ratepayers' representatives. Nor were any substantial building grants to be expected from the Government unless a great deal more pressure was applied to the Treasury to carry into effect the very shadowy promise made in the House of Commons last spring. Next to the deficiency of funds came the difficulty of getting any proper co-operation between so many Authorities, autonomous and often jealous of each other. Some inspiring and propelling force would seem to be required in many cases to effect the necessary combinations between counties and boroughs to establish training colleges. Possibly a lever towards this end might be found in the vaguely worded section of the Education Act which required Local Education Authorities, in forming their schemes of higher instruction, to enter into "consultation" with the Board of Education. But the most serious difficulty of all lay in what might be called the "localization" of the individual teacher. The ratepayers, who naturally wished to see their money's worth, would put this question to their County Councillor: "If you rate me for sending teachers to a training college, what guarantee can you give me that they will return to teach in our schools, or that an equivalent number of teachers trained by other Councils will do so?" This question could probably be answered with satisfaction to the ratepayer in the case of the metropolis and some other large towns and counties where the salaries of the teachers and the conditions of their employment were all that they could desire. But it was different in the rural counties, where plenty of good material for training was to be found, but where the schools were small and salaries, even under the new conditions, were likely to be moderate. There was also some danger that certain Local Authorities might prefer to secure teachers trained elsewhere by the offer of high salaries rather than train them themselves. Unless, therefore, some State machinery was devised for requiring each Local Authority to contribute its proper quota towards such training—a course which at present seems impracticable—the Local Authorities, either individually or in combination, would have to bind each teacher they trained to serve exclusively in their schools for a reasonable number of years. Such a system of indenture might be found financially necessary; but it did not seem educationally desirable, and its result must be seriously prejudicial both to the free circulation of educational energy and to the interests of the weaker counties and boroughs. He had hitherto had in mind the training of teachers in training colleges from the age of eighteen and upwards; but it must be remembered that for a long time to come many of our elementary teachers, at all events, would require liberal facilities for training in special subjects elsewhere than at training colleges, and that the Local Authorities would be required to find funds both for this purpose and to supplement the Government grants for training pupil-teachers. This strengthened the case for throwing the cost of training colleges upon the national Exchequer rather than on local rates. One argument against centralization which deservedly had some weight was the desirability of encouraging local experiments and variety of curricula in the training colleges. But there seemed no good reason why this object should not be secured by widening the field of Government grants and aiding equally various types of training courses, as was recommended to the Board by the Departmental Committee which sat in 1901. Equality of standard might be maintained through the Government inspectorate without imposing uniformity of teaching on institutions that ought to suit the different needs of town and country, of large and small schools. In short, the present problem seemed to be how to encourage and impel our Local Education Authorities each to bear its fair share in the task of increasing the supply of competent teachers without forcing them all into one groove and depriving them of all initiative and independence.

A paper by Mr. H. Macan suggested that there should be two classes of teachers—one highly trained (like foremen), the other without academic training (like journeymen). In the discussion. Mr. Gray, M.P., contended that the training of teachers should be at the cost of the nation, and that the time had come for the more scientific training of secondary teachers.

Mr. G. F. Daniell, Chairman of the Incorporated Association of Assistant Masters, urged the need for improving secondary education in this country. If the demand for better trained teachers existed, the supply would quickly grow up to meet it.

The Rev. W. T. A. Barber, Head Master of the Leys School, Cambridge, said that the elementary teachers in the course of their training should not be limited to the elementary schools. It was most important that they should be possessed of a broad training and of associations with other classes of the community than those from which their pupils were drawn. The training college should be in connexion with some university or large educational institution. In the past there had been no training for secondary-school teachers. But the difficulty was that in requiring training in pedagogics one year was added to the costly years of preparation already spent in the university. Unless the chances of the profession were improved, it would be impossible to find any teachers willing to fulfil the new requirements.

Dr. Cook, Chairman of the Bristol Education Committee, urged the difficulties of the Local Authorities, and said that he had known teachers come back from the training colleges less efficient for the imparting of knowledge than before. The curriculum of the ordinary training colleges provided a certain amount of education which was really that of the secondary school, but they gave very little instruction in the art of teaching. The localization difficulty was a ratepayers' question.

Principal Griffiths, of Cardiff, said that the one important question was whether the training of teachers should be a national or a local undertaking. In Wales the present difficulty was about to be considered by a congress of all the Education Authorities in the Principality, and the attempt was to be made to devise one scheme for the whole of Wales. It was most important that those who were training for the teaching profession should be associated with the students for other professions, and that the hard and fast division between primary and secondary teachers should be obliterated.

Sir John Gorst said that the question was how to increase the supply of competent teachers. That supply had been short before the Act of 1902 was passed, and it was much shorter now. The passing of an Act of Parliament did not create a body of teachers. It was most ridiculous to decide before the student was trained whether he was to be an elementary, a secondary, or a technical teacher; and he objected fundamentally to this attempt to divide education into these three water-tight compartments. To suppose that any one could be competent for one kind of teaching without any knowledge of the other kinds was a delusion. No doubt the supply of head masters of public schools could be left to take care of itself; but to increase the great body of teachers it would be necessary to draw on a class which could not afford the necessary training without State help. There was no difficulty in obtaining teachers in Ireland. Why not recruit the teaching staff from that country? The system of training teachers which had hitherto obtained had been a disastrous failure, and a revolution was necessary. The burden laid on the young pupil-teacher was greater than any one could bear, and he was never more indignant than when he heard Sir William Anson, in the House of Commons, reading out the ridiculous answers which pupil-teachers had given in examinations. Such answers were the exact result to be expected from the system now pursued. Assistance for the training of teachers must be given both from Imperial and from local funds; but he was opposed to the old-fashioned training college, where students for the teaching profession were completely isolated. The whole training of the teachers could be supplied in such existing educational institutions as the county schools and the universities, if the Government gave adequate grants. The qualification of the teacher should be certified to by the university and not by a Government Department, and invidious distinctions between one class of teachers and another should be avoided. Then the profession of teaching might offer an honourable career.

OUR EDUCATIONAL NEEDS.

SPEAKING recently at Sheffield, on the occasion of the distribution of prizes, &c., at the Central Higher School, Prof. Sadler brought out the close alliance of two subjects apparently wide apart — the causes of American enthusiasm for education and the educational needs of England. We give the substance of his remarks on both points (after the *Sheffield Independent*):

WHY THE AMERICANS BELIEVE IN EDUCATION.

Prof. Ripper and others who knew the United States would bear him out in saying that when one worked in an American city at educational questions the most striking thing was the fact that nearly everybody heartily believed in education. To put it mildly, he would say that that was not always the case in an English city. What was it that had really converted America? He believed three things had done it.

In the first place, ever since the middle of the seventeenth century, New England, which had been one of the great centres of high ideals in the United States, had had a public and efficient system of secondary education. Men who had led opinion in America had themselves been well educated and believed in schools.

The second reason was that at great expense, but with unfailing courage, Americans had put some of their best work into schools for little children. It was the bottoms of primary schools that contained the real secret of educational success. He did not want to lay before them and other responsible authorities an impossible programme, but he was convinced that they would never get the English democracy really to believe in elementary education until they had made the classes in their elementary schools much smaller than they were at present. They could not do this all at once, but was it not possible to resolve that in each great city they should have two or three classes which should be a model for the world, and in each the instruction given to little children should be such that they would look back to their first school-days with gratitude, affection, and pride?

The third thing that had made America believe in education was the public services rendered by her universities. They had not been exclusive, they had not been stand-off, they had not been pedantic. They had taken off their coats, gone into the streets, and worked for the common people. That was what they had got to do in England. They had to make every man and woman feel that the universities were theirs, working for them, and learning from them. It was no accident that we were living in England at the present time in a period of university renaissance. Many of our greatest educational ideas came from the old Italian universities which were founded just before and at the time of the revival in learning. With three exceptions, every single Italian university, including Padua, to which we in England owed a heavy debt, was founded or helped by municipal aid. Without this aid, indeed, only three or four of them could have been started on their illustrious career, and they were the outcome of a period of great commercial wealth, a period when the princes of industry and commerce saw that it was their interest as well as their duty to place large resources at the service of science and letters. It was municipal aid, too, which caused the establishment in Germany of the University of Erfurt, which was the first to carry out the new learning.

PRESENT EDUCATIONAL NEEDS OF ENGLAND.

Turning directly to the existing situation at home, Prof. Sadler said he believed that what we most wanted at the present time were these three things: (1) improvement in the instruction of our little children; (2) a public and efficient system of secondary education from ten to sixteen years of age; and (3) a number of well equipped and zealous universities crowning in their several districts the educational fabric of which they were the apex.

They could not have any really powerful or elevating educational system unless it was inspired by a great purpose. What was going to be the purpose of the Central Secondary School and those other secondary schools of which Sheffield had already reason to be proud, and would be more proud in the future? There was no better aim for a school than to train boys and girls to be useful and patriotic—ready and able to bear the burden of social service, and, by their industry, ability, sympathy, and self-control, to promote social peace and public well-being. In that way there might be an ever growing number of strenuous workers for the common good, keenly alive to the claim of local and municipal patriotism, but none the less sensitive to the wider duties imposed by the obligations of a great nation and a wide Empire—never forgetting that which linked thinking men and women of the world to that other citizenship for which all earthly claims were but a preparation. In the world Great Britain stood for certain high ideals—for fairness to opponents, for toleration, for empire combined with freedom, for unity of government combined with local difference, and for a desire to walk faithfully in the old ways and yet to be ready to try new experiments as the hour arrived for change. They needed to strengthen educational resources, strengthen industrial and commercial efficiency and the power to grapple with those menacing problems, mental and social, which were characteristic of these times of unrest. They believed their lives must be inspired by the greatest of literature, but, above all, that education must be human and real and practical. It must teach men and women to grapple with facts—to bottom things, not to be content with thinking, but with service—often having to clench their teeth and see things through. They could not have an education like that without the best teachers in their schools, and what most mattered was that such teachers should guide by their influence those committed to their charge.

In the second place, they must stand for individual character. If they came to think of it, the two greatest names in education in Yorkshire were Wycliffe and Joseph Priestley, who had done much by their individuality. Wycliffe's work is well known. Priestley stood up for independence of effort against the excessive claims of the monopoly of the State.

Thirdly, they must have not only the letters, but the practice of art. Such an art as vocal music, which they practised with such effect in Sheffield, proved this. The love of country and Nature should be made a great feature in school work. As the Welsh said: "An eye to see Nature; a mind to understand Nature; and a will to go along with Nature." There was in the education of women hardly anything more important than a pride in exquisite skill in making and keeping a home. Could they wish for anything better than that there should come to every citizen unstinted access to educational opportunity on the highest plane? Let them have an education that trained men and women to steadfastness of character combined with openness of mind, which saw in labour and home-making a way of life no less honourable than scientific and literary skill, and endeavoured to combine all efforts of labour in a common field, which widened the outlook and the sure bond of social welfare and social peace.

This, and nothing less than this, was the task which lay before them. It was a task that could only be accomplished by patient labour and at great cost, and by regard for many points of view. But, difficult as it was, the task was not impossible of accomplishment. It was a task in which all could bear their parts, parents and scholars, employers and workpeople, teachers and administrators. Let them brace themselves to it with courage, with humility, and with unconquerable hope.

THE TEACHING OF HYGIENE.

THE Sanitary Institute, following up the recent deputation from the medical profession to the Board of Education urging the need for the teaching of hygiene in the schools, has addressed the following letter to the Education Authorities throughout England. The Secretary (Mr. E. White Wallis, F.S.S.) writes:—

In the reorganizing of the educational system of the country a great deal of attention is being directed to the adequate training of the teacher, and the Council of the Sanitary Institute desire to urge upon your consideration the necessity of giving a prominent place in this preparation to some practical training in the appreciation of the health conditions essential for carrying on the work of instruction.

Ever since the passing of the Education Act in 1898, the Institute have urged upon the school world the value and importance of hygiene as the basis of education, and they appointed a committee of experts, consisting of medical officers of health, engineers, architects, and others, who have given attention to this need of systematic application of hygiene in school life, to draw up a syllabus, indicating the points that should be comprehended in the training of all teachers.

The teaching of the laws of health in schools will have little effect in training the scholar in the observance of these laws unless they are observed and practised in the conduct of the school, and such training can only be accomplished where the teachers have themselves been trained by practical and experimental work to understand (1) how the laws of health enter into every department of school life, the mental and moral, as well as the physical, and (2) that the subject is one that must be inculcated in the child by observation and experiment. The regulations issued this month by the Board of Education for the training of teachers sum up the professional training with the following very satisfactory recommendations:—"The students ought to have an adequate knowledge of school hygiene. They should understand the general conditions necessary for making a building or a room healthy and for keeping it so, and they should be well acquainted with the rules of personal health, and, so far as possible, with the physiological principles upon which these rules are based. In the case of women students, the nutritive value of food-stuffs in connexion with their cost in the market and in relation to the needs of young children should be known in outlines, even though the student may not be specially qualified in domestic economy. Only thus will they know how to conduct the school as a whole with the greatest profit to the health and bodily development of scholars, and how to adapt the instruction to the limitations which are imposed in some cases by the feeble health of the children or by the poverty or neglect of their parents."

In the prefatory memorandum to these regulations it is also urged

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that every training college should attempt to conduct its instruction in such a way that there shall be in the case of each student some range of knowledge within which there is no fact and no inference from fact that has not been subjected to the severest tests at his command.

No subject offers a better field for this process of tested knowledge than the subject of hygiene, for, while it affords excellent opportunity for practical work in testing methods, it co-ordinates with nearly all other branches of the teacher's work, and affords an amount of diversity and adaptability which would make its adoption practicable in nearly all colleges, and, if adopted, would give a living groundwork to educational methods, which to be successful must be based on the conditions of health essential to carrying on the work of instruction in schools. Experience, however, has proved the practical advantage of subjecting recently acquired knowledge to the test of examination, and with this end in view the Council of the Sanitary Institute initiated an examination in applied hygiene for school teachers, which has already been adopted and made the focus for the training of teachers under some of the County Councils.

If, in the preparation or carrying out of any scheme that your Council propose, the Institute can, by this examination, or by co-operation in any other way, be of use in furthering the desired end, my Council would be very glad.

REVIEWS.

Pagan Idolatry.

The Worship of the Dead. By Colonel J. Garnier, late Royal Engineers. (12s. 6d. net. Chapman & Hall.)

Colonel Garnier proposes to inquire, not generally into the question of "ancestor worship," but into "the origin and nature of pagan idolatry and its bearing upon the early history of Egypt and Babylonia." He remarks that "the intimate relation of the ancient paganism to the early history of mankind and its influence on the fate and fortunes of the human race gives no little interest and importance to any inquiry into its origin and nature," and he sets himself "to compress into a moderate compass and readable form the facts and archæological discoveries which show the relation of the gods and religious systems of various nations to each other, and to point out the significance and interpretation of the ancient traditions and mythological stories and their bearing on the events of actual history." The task is a sufficiently adventurous one, even for a writer equipped with first-hand knowledge of the intricate mazes of the subject and armed with an acute and alert logical faculty. Colonel Garnier, though himself bold in conjecture, adopts a formal attitude of stringent conservatism: not only does he condemn roundly the "higher" Biblical criticism (whose highest flights are not great in comparison with his own), but he frankly maintains, for example, that every page of the chronicles of Herodotus "bears the impress of a man who is honestly and faithfully relating exactly what he saw and heard" (pages 6–7)—a view that will interest Prof. Sayce. In particular, he champions "the evidence which proves that the originals of the pagan gods were human beings who had once lived upon the Earth." If it be said that the primitive religion of Egypt, Assyria, &c., was a Nature worship, he will not disagree, but he will affirm that "the human originals of the pagan gods were identified with these material objects and powers, and were regarded as their incarnations or human manifestations" (page 147; *cf.* page 13). His general position is stated thus (page v.):

> Attention is called to the fact that the numerous testimonies referred to by the author are not those of one people and one age, but of many individuals living in different ages, and of different nationalities; and that one and all are without the slightest evidence of artificial construction or systematic purpose. They are, for the most part, the statements of persons without relation to each other, who simply record the statements of the people of other countries, or briefly allude to the general belief current in their own. They form, therefore, a number of perfectly independent witnesses, whose testimony is all the more valuable because they are often entirely unaware of the import and significance of their own evidence. It will be seen, also, that their statements mutually explain and confirm each other, while their very mistakes and misconceptions, due to their ignorance of the matters to which they refer, are a guarantee of the genuineness of the statements themselves, and often help to explain their significance.

If we rightly understand this, it may pass for a fairly reasonable basis of action. The test of it lies in the application. We cannot but doubt, however, whether Colonel Garnier has adequately realized the rarity of accurate observation and report, or the insidious frequency of speculation or inference honestly set out in the guise of fact, or the relation of the opinion of a writer to the opinions of the mass of the people of his time.

Part I. is devoted to "Pagan Gods and Goddesses"—gods of East and West, from China to Peru. The author quotes copiously from scores of authors to prove "the connexion and identity of the religious systems of nations most remote from each other." "Everywhere we find the most startling coincidences in rites, ceremonies, customs, traditions, and in the names and relations of their respective gods and goddesses" (page 1). In a word, "Babylon was the centre from which the ancient paganism originated" and spread over the civilized world; Cush, or Hermes (Trismegistus)—whom he identifies with "the most ancient and mythological Buddha," and with various other personages, particularly the father of Nimrod—"was the master mind and originator of this idolatry" (page 147), or, as it is otherwise expressed, "the originator of postdiluvian idolatry" (page 185). We should not like to be responsible for all the links in Colonel Garnier's chain of reasoning. It is startling, for example, to read that Rome "obtained her laws from Greece" (page 353); and it is disconcerting to learn that "Pra Japeti" means "the Lord Japhet" (son of Noah), for we had supposed Praja-pati to be "Lord of Creatures," the son of Dyaus ("the Sky," "Heaven"). Colonel Garnier accomplishes the transformation thus (pages 17, 18):

> In the Hindu mythology, "Sama," "Chama," and "Pra-Japeti" are said to be born of Menu, and to be the human names of the gods "Vishnu," "Siva," and "Brahma." "Pra-Japeti" means "the Lord Japhet," and, the final "a" in "Sama" and "Chama" being quiescent, it is clear that "Chama" is only a form of "Cham" or "Kham," the Egyptian name of "Ham"; and that "Sama" is "Sem," the Greek form of "Shem."

There is much to be explained here, and the passage must be taken in connexion with the rest of the argument; but the author expects too much mental agility from his readers. Again, while he thinks it evident that "Dyauspiter" ("Heaven Father"), the God of Lightning, is identicalwith Jupiter, the God of Lightning, who was called "Diespiter" (page 95), he is bold enough to suggest (page 41) that "the name may also possibly be a corruption, or adaptation, of the name of their [the Aryan nations'] ancestor Japetus, who, we know [*i.e.*, Colonel Garnier has already asserted], was deified under the title of 'Pra-Japeti.'" One flight more (page 139):

> It was so said by Demetrius, quoted by Plutarch, that the islands of Scotland were inhabited by the gods of the natives. Now Bute, Arran, Islay, Iona, Skye, &c., may very well be synonymous with "*Bud*" [=Buddha; said to have been worshipped by "the ancient Irish"]; "*Arhan*," a title of Buddha; "*Ila*," his wife; the Indian "*Yune*," "*Ioné*," or "*Juno*"; and "*Sakya*," one of the most general titles of Buddha.

When the Scotch speak of a "boodie," or "the Boodie" (Devil), they will now know that they are using a modified form of *Bhuta* (Buddha), common to them with the Devil-worshipping Tulus of the west coast of India; just as Woden is, according to Colonel Garnier, also Buddha, through *Pooden*, or *Poden*, "the Tamulic pronunciation of Buddha, or Bodhi" (page 134; *cf.* page 126), and Tuisto is but a slight modification of *Twashta*, one of the titles of Buddha (pages 127, 136). Colonel Garnier might have profitably been more explanatory. But there can be no question about his industry.

Part II. considers "The Origin and Nature of Pagan Idolatry." Here Colonel Garnier discusses the magic of Hermes, the worship of the Sun and the serpent (with association of the *phallus* and the tree or cross), the Nephilim (with the introduction of the worship of and intercourse with evil spirits, supposed to be spirits of the dead), and the worship of the seven stars and the twelve signs of the Zodiac, "which, according to Maimonides, was instituted by Tammuz, *i.e.*, Nimrod" (page 246). Part III. relates "the overthrow of the primitive paganism" and discusses "its relation to the early history of Babylon and Egypt." When Colonel Garnier says that "it is probable that the term 'Keltic,' as applied to the different dialects called by that name, may really be a misnomer," we fancy he is not far off the truth, though we should arrive at a like opinion by a very different route; but what is to be thought of his further probability that, "as the French and Iberians are the purest descendants of the ancient Kelts, the French and Spanish languages, although largely leavened with Latin [!], should be regarded as more truly representative of the ancient Keltic" (page 309)? Part IV. deals with the resuscitation and development of pagan idolatry. The final chapter, on the moral aspect of paganism, receives a modern and practical turn in condemnation of saint-worship, spiritualism, theosophy, mesmerism, faith-healing, hypnotism, &c.; for the spirits of spiritualism and theosophy, "although asserted to be

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the spirits of the dead, can only be the same *daimonia* who gave the pagan priesthood their powers," while the associated practices of mesmerism, &c., "are identical with the arts by which the ancient sorcerers and magicians sought the aid of these *daimonia*." Though, to our mind at least, singularly inconclusive, the volume contains a vast mass of materials brought together in combinations that are curiously suggestive; and it is a monument of elevated interest and indefatigable industry. It is liberally got up; but the proofs should have been read with more care.

Democratic Secondary Education.

A Modern School. By Paul H. Hanus, Professor of the History and Art of Teaching at Harvard University. (5s. net. Macmillan.)

In this book Prof. Hanus has brought together a number of essays amplifying his earlier work entitled "Educational Aims and Educational Values." The problem he sets himself to solve is one of equal importance for Englishmen, the investigation of the best form of secondary education for a democratic society. His statement of the aim of the secondary school is excellent.

> It should [he says] especially promote the discovery and development of each pupil's dominant interests and powers, and, further, it should seek to render these interests and powers subservient to life's serious purposes and also to the possibility of participation in the refined pleasures of life.

One of the earlier chapters sketches the history of secondary education in Massachusetts. In 1647 a law was passed that every town of a hundred householders should set up a grammar school (*i.e.*, a classical school), to prepare boys for the University. There is evidence that the dominant idea in the minds of those who passed this law was to perpetuate a learned ministry. It remained, however, almost a dead letter; and subsequent statutes of 1789 and 1824 exempted a number of towns from an obligation they had never taken seriously. This failure of the grammar-school system seems to have been due not only to the poverty of young and struggling communities and to the absorbing politics of the towns, but also to the feeling that, under altered social conditions, such schools met the wants of only a limited number of families. Meanwhile, thanks to private generosity and private initiative, another class of schools, the "Academies," sprang up. They were characterized by a wider curriculum, and claimed to give a liberal education to all their pupils, whether destined for the University or not; but, unlike the grammar schools, they were not accessible to rich and poor alike. In 1826 came a further development: a legal obligation was imposed on all towns of four thousand inhabitants to maintain a "public high school" for both sexes. Thus the accessibility of the grammar school and the wide curriculum of the academy were combined; and, as the author adds, the distinction long drawn between preparation for college and preparation for life is fast disappearing.

The programme of the high school forms the subject of some interesting chapters. Prof. Hanus thinks that it should cover about six years—say from twelve to eighteen—and that it should encourage the "elective" system of studies, that is, the choice of studies by the pupil under judicious guidance. He condemns working "against the grain" at uncongenial subjects, in which it is impossible for a pupil to gain any sense of achievement or conscious mastery of a subject for its own sake. At the same time he would prescribe a limited amount of certain studies for all. These studies are: (1) English language and especially literature; (2) natural science (physical geography or botany and geology); (3) a modern foreign language; (4) American or English history; (5) the history of industry and commerce with the elements of "civics"; (6) elementary algebra and geometry; (7) drawing and manual training. He does not desire that all these studies should be carried very far, but looks forward to a selection being made on adequate grounds. The programme thus sketched seems somewhat congested: to relieve it, it is necessary to revise the work of the elementary or preparatory school, which, it appears, is still limited to the old formal curriculum, confining its higher classes to English grammar, arithmetic, and political geography. For the more advanced work on these subjects Prof. Hanus would substitute elementary work in a modern language, geometry and algebra, and natural science, thus bridging the gap between the two classes of schools and giving unity and continuity to the whole educational system. Steps in this direction have already been taken, in accordance with the recommendations of the "Committee of Ten"—an important body which reported a few years ago.

From what has been said it must be obvious that the Professor is no friend of classical studies as a general means of education. "It is false," he says, "to assume that because a youth has studied Greek and Latin for several years he has been trained to apply himself with vigour and success to any mental problem that may be presented to him." What he considers most important is to gain an intelligent appreciation of the part played by Greece and Rome in the development of modern civilization. For this he would have their history studied, and also translations ot some of the masterpieces of classical literature. When Latin is studied as a language, he would adopt the Frankfort system, and preface it with two or three years of French. Other chapters deal with "The School and the Home," "Education as a University Study," and "The Elective System in the University."

"Apperception."

The Secret of Herbart: an Essay on Education, and a Reply to Professor James of Harvard. By F. H. Hayward, D.Litt., M.A., B.Sc. (2s. Sonnenschein.)

Dr. Hayward is still in exalted mood. Like some Homeric warrior, armed *cap-à-pie*, shield in front, spear drawn back in act to hurl, he ranges around Herbart and defies the field, undeterred by his confessed distrust of former "somewhat crude panegyrics" on a point of Herbartian doctrine. He does not want to be told that his essay is "suggestive" and "stimulating"; he wants "to know whether it is true." "Is this apperception doctrine right or wrong?" This is a very refreshing spirit, certainly; but somewhat bustling for less impetuous people. Dr. Hayward is urgent because the question is urgent: for "all talk about educational 'progress,' whether at political caucuses or at teachers' conferences, is unmitigated nonsense until some definite views, theories, or ideals are possessed by the teachers of this country." Frankly, with every respect for Herbart, and with real appreciation of Dr. Hayward's earnestness, we do not understand such an assertion as this. The South of England may be as backward as the author finds it; he admits that he does not know the North; but surely even in the South the teachers are not destitute of "definite views, theories, or ideals." Again (page 36): "Education has failed: we have to admit it." We admit nothing of the kind; nor, so far as educational results have fallen short, should we lay much of the blame on "the failure of teachers to realize the immensity of the mission to which they are called." The schoolmaster "has combined the culture of a bucolic boor with the arrogance of a newly-fledged ritualistic curate": the generalization is an indiscriminating libel. "On the whole, educationists, 'scientific' or 'empirical,' do not appear to be very much in earnest." Such extravagances of advocacy would ruin any cause.

The "Secret"—a term adapted from an expression of Prof. James's—lies in the "apperception" doctrine. Prof. James implies that the word "apperception" does not contain any "recondite and portentous secret"; Dr. Hayward intends to show that "the 'apperception' doctrine has well-nigh incalculable moral, social, and spiritual implications." Such a wide outlook leads him to remark on many aspects of education, more or less pertinent, and at length (page 71) he comes to this:

> What, then, from the educationist's standpoint, is the conclusion and the summary of the matter? What are we to learn from the preceding reflections and experiences?
>
> A simple thing—a thing so simple, indeed, that when stated in these pages many a reader will wonder that there was ever need to state it at all. *The school must nourish the souls of its pupils*, and the only nourishment possible is ideas. There may be other tasks—there are; the soul must be exercised and trained, as well as fed; but the feeding is the first and essential thing, and the richest food of all—that which best of all builds up moral fibre—is the humanistic food that comes down to us from the past in the form of fairy tale, biography, history, and literature.

Really one has difficulty in discerning the urgent need for "full, frank, and remorseless criticism." The matter has received, and is receiving, adequate criticism, both in this country and in America, as well as on the Continent of Europe. Surely there is abundance of "fairy tale, biography, history, and literature" within reach of everybody. In school, indeed, time must be found for "other tasks"; but one cannot survey even the school provision and entertain Dr. Hayward's alarms. Moreover, the efficiency of this "humanistic food" in "building up moral fibre" depends on its preparation: not one of these subjects can be usefully taught without large critical capacity and knowledge on the part of the teacher. Besides, "ideas" are not confined to these subjects; many ideas from other subjects are no less

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essential. Then there is the question of the balance of the curriculum; and, if the children are taught in school to read with interest, they can, at an early stage, relieve the school work materially by reading at home on such lines as attract them most. There is no use in overhauling here and now the ethical basis of the Herbartian doctrine, or of commenting on fifty points in Dr. Hayward's "preceding reflections and experiences" that provoke discussion. We content ourselves with suggesting that it is very easy for an educated and zealous critic of educational results to expect a vast deal too much both from teachers and from pupils as well as from particular systems, and to neglect neither few nor unimportant conditions over which neither teachers nor pupils can exert any effective control.

A Century of Russian History.

The Expansion of Russia, 1815–1900. By Francis Henry Skrine, F.S.S., H.M.'s Indian Civil Service (retired). (6s. Cambridge University Press.)

"The Conference of the Hague advanced the true interests of our race and the coming of the hour when brute force shall yield to right and justice. A century of Russian history which dawned in bloodshed closed with a determined effort to give the blessings of peace to a distracted world." These are the closing sentences of Mr. Skrine's volume. And already? The Manchurian shambles suggest a fearful commentary on "the Tsar's noble designs" and the conditions of his Empire and government. However, Mr. Skrine's outline of the recent history of Russia comes at a most opportune time. He presents a vivid and easy narrative from 1815 to the close of last century. He brings into relief the personal action of the Tsars, and of great officers of State—an inevitable consequence of the political organization of the Empire and an attractive feature of historical composition. He has read widely, and not inconsiderably, official documents. The Central Asian expansion is strongly described, as well as the southward straining to Constantinople; and three excellent maps help the reader to realize the meaning of the movements. Here and there one needs to read with caution. The Russification of Finland is treated far too leniently; indeed, to a considerable extent, apologetically. It is an unworthy and unwarranted assertion that Gladstone used the strong feeling evoked by the Bulgarian atrocities to "serve his political ambition." It is a complete mistake to say that the Stolietov Mission to Kabul "was warmly received by the Amir." Literature and education, and social conditions generally, appear to have been expressly treated with but incidental attention. The political outline, however, is traced in a forcible and flexible narrative, which will be very welcome as a general guide to the development of Russian policy and the fortunes of the Russian Empire during the past century.

East and West.

The Problem of Existence: its Mystery, Struggle, and Comfort—in the light of Aryan Wisdom. By Manmath C. Mallik, (10s. 6d. Fisher Unwin.)

Mr. Mallik is an Indian member of the English Bar of considerable standing, and he has sat at the feet of the pundits of Benares for a dozen years. His object in this volume is "to inquire whether the virtues preached and practised by great minds in the past"—and especially by the ancient Aryans of India—"cannot be assimilated with what is called by its admirers and devotees practical modern life." In Part I., treating of "The Mystery of Life," he examines the nature of man, and the process and outcome of physical and mental action, with special reference to the highest objects of life. In Part II., treating of "The Struggle of Life," he considers the requisites for success and the causes of failure, duty in its various aspects, and educational training in different departments. In Part III., which treats of "The Comfort of Life," he touches on the several forms of asceticism, the gradual "dawn of light," &c., and resumes "cardinal principles." The attempt to adjust ancient Aryan ideas with modern thought and practice is sufficiently arduous, and, of course, not always successful, but at the same time very interesting. The scientific and philosophical developments of the West are not taken account of so fully as to satisfy such as are fairly acquainted with them. But all can admire the author's earnestness and elevation of thought, and agree on his fundamental contention in favour of the fullest inculcation of the principle of self-control. In many ways, both in its weaknesses and in its strength, a striking product of Indo-Anglian thought.

GENERAL NOTICES.

CLASSICS.

A History of Roman Literature. By Harold N. Fowler, Ph.D., Professor in the College for Women of Western Reserve University. (5s. net. Appletons. Twentieth Century Text-Books.)

"It is proper," Prof. Fowler concludes, "to speak of Roman literature rather than Latin literature; for that which interests us is the literature of the city by the Tiber and of the civilization with which the city is identified rather than works written in the Latin language." The chief writers are very fairly represented in the space available, and it is hardly worth while to cavil at the apparently undue attention given to various minor personages. The attempt to describe the contents of works and to furnish specimens is inevitably difficult, though it enlivens the page and contributes to realization of the author. The sentence or two devoted to each of the plays of Plautus, for example, cannot but convey an impression of scrappiness, and the exemplary extracts are often similarly feeble; yet, on the whole, the results are suggestive and may prove stimulating. When Prof. Fowler gets off the strictly literary track, he is not always fortunate. When he tells us that the *Tripertita* "was for centuries regarded with reverence as the beginning from which grew the great system of Roman law," we are fairly nonplussed. However, this is too common a failing to excite surprise, and it is confined to a very narrow compass. The essential purpose of the book is very satisfactorily attained, and it is written in an easy, unpretentious, and attractive style. It is well worth its place in the excellent series.

Steps to Latin. By Gavin Hamilton, M.A. (Melrose: R. W. Macbean.)

Mr. Hamilton writes for pupils "from Second to Fifth Class." Zumpt and Madvig, and "modern foreign theorists" generally, he cannot abide: on his title-page he appeals to Cæsar, and to Cicero, on the strength of half a century's study. The attitude is right, no doubt; but we should have thought that Classes Two to Five might be taught the elements of Latin without being involved in the strife of ancient authors and modern theorists, foreign or native. Further, Mr. Hamilton sets forth, also on his title-page, that his book is "designed to make pupils laugh rather than cry." We do not see any necessity for making them either laugh or cry; though we admit that we should prefer the laughing philosopher. The laughing material is abundant, and, we may venture to say, in part at least, welcome: "ridentem dicere uerum quid uetat?" But not unfrequently—indeed, to be frank, very frequently—the humour is somewhat crude, for our taste, and the views of the author on a wide range of subjects are too often disputable, and even provocative. The ablative absolute might, we think, be effectively illustrated without the martial aid of "Bobsie."

"Bobsius ecce redit, magnâ *comitante caterva.*
Bravo, bravo!—
So Bobsie's back with comrades in his fights,
In whom the Queen, with people all delights."

Apart from the hopeless vulgarity of "Bobsie," and apart from political and military opinion of Lord Roberts's task and conduct—all which ought to be kept outside Latin teaching—what about "caterva"? Would Cicero or Cæsar, or even Madvig, have used it there? A highly reputable Latin lexicon tells us it was used "especially of barbarian nations, in opposition to the Roman legions," and, indeed, is "rare of Roman troops." Has Mr. Hamilton not involved himself in a political contradiction? From the same page (131) we take another gem:

"Bobse te cuncti diligunt Britanni,
Teque mirantur quia victor esses,
Care, restabit tibi laus perennis,
Tempus in omne."

"Bobsie, on thee the Britons love bestow,
Consummate victor of the Afric foe,
Thy glorious triumphs no end shall know,
Bobsie, bravo, bravo!"

The last line of the sapphic seems rather superfluous after "perennis," and the third line of the English version, if hardly exemplary in rhythm, may be due to the exalted feeling of the poet; but would Cicero or Cæsar — or Madvig — have written "quia victor esses" there? Or would

"Quintus Horatius Flaccus,
Jolly, lively, gay as Bacchus" (page 132)?

The volume reminds one of the haggis—"fine confused feedin'."

MATHEMATICS.

Against the Metric System. By Herbert Spencer. (3d. Williams & Norgate.)

A special interest attaches to the issue of the third edition of this pamphlet. A codicil to Mr. Spencer's will provided for the publication of the pamphlet at a nominal price in the event of an early revival of active Parliamentary discussion relative to the introduction

of the metric system into England. The benefits to accrue from the establishment in this country of a decimal system of weights and measures and coinage are advocated by many, and it is well that the other side of the question should be heard. Mr. Spencer takes strong grounds; he pleads forcibly for the survival of the present system, not as a perfect system in its present state, but as one possessing capabilities for development into an ideal system which are essentially wanting in the decimal system, and which would be hopelessly crushed if the change were effected. A new society, we observe, has established itself in London with some such programme in hand, and it will be interesting to see what comes of its labours. Mr. Spencer strikes a very salutary note of caution, and all should study his able arguments before pronouncing a definite opinion in favour of innovation. He appeals to the best type of English conservatism—the conservatism that persists in refusing to adopt any but well considered changes. In the present edition the body of the text is a reprint of the original, but the support of outside testimony as given in the appendixes has been considerably supplemented.

A School Geometry, Parts I. to V. By H. S. Hall, M.A., and F. H. Stevens, M.A. (4s. 6d. Macmillan.)

From time to time we have had occasion to notice the earlier sections of this work, which in its complete form will be one of the leading school text-books inspired by the recent agitation for the improved teaching of mathematics. It follows closely the recommendations of the Mathematical Association. The portions of the present volume to which at the moment special attention should be directed are Parts IV. and V., dealing respectively with the substance of the Second and Sixth Books of Euclid. The general treatment of the text is good, and the work is likely to become as popular as the author's "Euclid." Great scope for extended usefulness has been secured by the manner of publication, the parts having been issued separately and also in varied combination. The Sixth (doubtless the concluding) section of the text-book is in course of preparation.

Logarithms for Beginners. By Charles N. Pickworth. (1s. Whittaker.)

The work presents to the reader a very lucid account of logarithms and the principles of logarithmic calculation. The difficulties that often trouble the beginner are anticipated as far as possible, and, in the case of each, special pains have been taken to try and smooth it. The text comprises, in addition to simple explanations, a number of fully worked illustrative examples, and exercises (with answers) have been provided for practice. The general principles and their application to four-figure common logarithms form the primary subject of discussion; but the closing chapters are devoted to an introduction to more elaborate systems and to those calculated to bases other than 10. Tables of the four-figure logarithms and corresponding tables of antilogarithms will be found at the close of the volume.

Arithmetic, Scheme A, Books III., IV., V. and VII. By W. H. Higden. (2d., 3d., 3d., and 5d. Pitmans.)

The sets of exercises in arithmetic included in each of these volumes are of gradually increasing difficulty, and constitute a useful series for class purposes. Many teachers will consider it an advantage that the answers are not attached.

SCIENCE.

Strength and Elasticity of Structural Members. By R. J. Woods, M.E., M.I.C.E., Fellow and Assistant Professor of Engineering, Coopers Hill. (10s. 6d. net. E. Arnold.)

The book has been shaped from a series of lectures to students at Coopers Hill, and thus is mainly suited to engineers, though by no means exclusively so. It can be tackled without any very advanced knowledge of mathematics; and the treatment is thoroughly practical, while the methods are simple and concise. A considerable number of well devised exercises (with answers) are appended to most of the chapters. There are 292 figures. The volume is carefully printed and substantially got up. It promises to be extremely helpful.

Mechanics, Molecular Physics, and Heat. By R. A. Millikan, Assistant Professor of Physics in the University of Science, Chicago. (7s. Ginn.)

The volume combines class-room study and laboratory work on a well considered system, aiming at the college grade of attainment. It is deliberately confined to select principles and methods, with a view of getting to the vital spirit of the subject rather than of introducing the student to comprehensive details. Special attention is given to exact measurement. The work has been well thought out, and worked out on a broad basis of practical experience. The get-up is good and serviceable.

Messrs. George Bell & Sons publish a sixth edition of *A Treatise on Hydromechanics: Part I., Hydrostatics*, by W. H. Besant, Sc.D., F.R.S., and A. S. Ramsey, M.A. With careful revision in general, considerable alterations and additions have been made, and the examples have been freshened. The stability of equilibrium of floating bodies has been rehandled on the basis of the principle of energy, which has also been applied vigorously to the laws of capillarity; and the tension of flexible surfaces is treated on fresh lines. The work, excellent as it has always been, has been decidedly strengthened.

A third edition of *A First Book of Electricity and Magnetism*, by W. Perren Maycock, M.I.E.E., is issued by Messrs. Whittaker (2s. 6d.). The work has been searchingly revised and considerably enlarged; many of the figures have been redrawn; and a useful list of experiments (131) has been added. 127 illustrations.

Messrs. Blackie furnish forth handsomely in their series of "Science Text-Books" a fifth edition of the well known *Text-Book of Geology*, "intended as an introduction to the study of the rocks and their contents," by W. Jerome Harrison, F.G.S., Chief Science Demonstrator for the Birmingham City Committee of Education. The book has been carefully revised and brought up to date. There are 140 figures.

MODERN LANGUAGES.

Hugo. *Les Burgraves.* Edited by H. W. Eve, M.A., formerly Fellow of Trinity College, Cambridge, and late Head Master of University College School, London. (2s. 6d. Cambridge University Press. Pitt Press Series.)

The subject belongs to a peculiarly interesting period of mediæval history, towards the end of the disastrous conflict of rival Emperors. The burgrave's castle is most carefully pictured; the spirit of the time is impressed with powerful effect; and the drama is masterly in construction and in style. The work is a very welcome addition to the school repertory, and Mr. Eve has explained and illustrated it with characteristic thoroughness, care, and discrimination. The introduction and the notes are alike marked by sound scholarship and sound judgment.

Lessing. *Minna von Barnhelm.* Edited by R. A. von Minckwitz and Anne Crombie Wilder, B.A. (2s. Ginn. International Modern Language Series.)

The text is Lachmann-Muncker's (Stuttgart), with a few slight deviations. In i. 8 (page 17, line 23), in "Wenn er es länge treibt," surely "länger" is the correct reading; and, in i. 12 (page 21, line 12), "liest" should be "liesest." There is an historical interest in "währendes Krieges" (ii. 2; page 33, line 16; and elsewhere), instead of the ordinary reading, "während des Krieges." The notes are generally useful, though some might readily be spared to make room for desirable explanations omitted. In i. 2 (page 133; 6. 28), "verzweifelte" ("der verzweifelte Nachbar") should scarcely be explained as "one who drives others to despair," though he may in fact do so; and, in i. 4 (page 133; 10. 8), "Lieber Bestie als so ein Mensch—*i.e.*, I should prefer by far to be such a man rather than to be a beast," seems to turn the preference round full circle. "Ich wüszte eben nicht—I do not know of any," still leaves the form unexplained. The vocabulary is also open to improvement. However, the edition is attractively got up, and cannot fail to be very helpful to students of Lessing's charming comedy.

M. Ludwig Weber, Professor of the German Language and Literature, St. Louis College, Brussels, offers to English students *A New Course of Commercial German*, "complete in twenty lessons," with numerous exercises, phraseological vocabularies, &c. (2s. 6d., Hachette). It comes with the recommendation of having been already officially adopted in Belgian institutions. Main points are effectively set forth, and the book is attractively got up.

ENGLISH LITERATURE.

Wordsworth. By Walter Raleigh. (6s. E. Arnold.)

It would certainly be unfortunate, and, except from one point of view, radically uncritical, that Wordsworth, or any other writer, should "be judged by standards that he repudiated, and valued for reasons that have little to do with the inspiration and motive of his work." Yet Wordsworth has suffered on this score, and that, too, in the face of his own explicit protest. Accordingly, we welcome Prof. Raleigh's effort to sustain the poet's plea, "to approach the poetry of Wordsworth with a favourable predisposition," and "to attempt to read it as he would have wished it to be read, and to find in it what he attempted to express." In this enterprise he is happily assisted by the "full body of criticism on his own work" left by the poet. So he puts aside the commentators and communes directly with the heart and mind of his author. The treatment is fresh, sympathetic, and illuminating, and it is expressed in an ample, fluent, and attractive exposition. The work seems to us to be one of the finest pieces of reasonable and convincing criticism in our time; and no student of Wordsworth, or of English literature, will neglect it without literary loss.

"The Favourite Classics."—*The Plays of Shakespeare.* (6d. a volume. Heinemann.)

The first issues—"Hamlet," "The Merchant of Venice," "Richard III.," and "Twelfth Night"—show that the series will be really a "favourite" series of "favourite" works. The form is most convenient; paper and print are excellent; and the binding is tasteful and durable. Each volume has a frontispiece plate executed in photogravure, so that the series will form a very interesting illustrative collection. Dr. George Brandes supplies excellent introductions—literary and critical.

A second batch of four—"Cymbeline," "Macbeth," "Coriolanus," and "Romeo and Juliet"—confirms our first impression.

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Poems of Thomas Campbell. Selected and arranged by Lewis Campbell. (2s. 6d. net. Macmillan.)

A welcome addition to the "Golden Treasury Series." Dr. Campbell, a relative of the poet, furnishes an admirable introduction, and has bestowed solicitous care upon the text. A frontispiece reproduces Wilkie's portrait of the poet at twenty-four (about 1802).

ENGLISH GRAMMAR AND COMPOSITION.

Senior Course of English Composition. By J. C. Nesfield, M.A. (3s. 6d. Macmillan.)

The work is disposed in two parts. The first (pages 1–106) treats of the qualities of composition, the scheme differing but little from those of previous writers, and the main characteristic being the vast agglomeration of examples. These examples are largely fresh, but a good many of them seem rather beyond the pupil in point of matter. The author shows a stronger grip of his subject than most of his competitors, and his directions and suggestions will be very useful. But not unfrequently he seems hypercritical, or gets out of one apparent difficulty only to land himself in another. Take page 31 at random. Bolingbroke writes: "I know that all words which are signs of complex ideas furnish matter of mistake or cavil." Mr. Nesfield thinks the sense would have been clearer if Bolingbroke had written "all *those* words." Surely the sentence is perfectly clear—though a very temporary dubiety may be caused by "which" (for "that"); and the insertion of "those" makes the expression unduly heavy and unduly emphatic. Again: "And thus the son the fervent sire addressed." Mr. Nesfield would improve Pope by writing "*his* fervent sire," which he thinks would be much clearer. We do not see that it would be a bit clearer; and, if the line be read in its connexion (Homer, "Odyssey" xix., *init.*), there is no obscurity whatever. Once more: "Like a householder who bringeth out of his treasure things new and old." In the interests of improved perspicuity, Mr. Nesfield would say "new things and old"; and again we fail to see eye to eye with him. Other pages would similarly exemplify a literary sense overborne by an attitude of minute criticism, excellent in purpose, but not adequately controlled by the wider outlook. This part of the work, though no better than some other works, is still of high quality, and offers a wide field for practice. The second part (pages 107–338) is devoted to essay-writing, and contains excellent explanations of the sentence and the paragraph, followed by a multitude of "essays for reproduction" and "notes for essays" in the different kinds of composition. The classification of kinds seems a cross-division, but that is of no practical moment. The matter of the essays suggests higher attainments on the part of the pupil than we should readily expect to find; only there is ample room for selection. Moreover, there would, we think, be more virtue in a fuller analysis of exemplary passages. There is a large appendix of essay subjects drawn from a dozen series of public examinations.

Introduction to Rhetoric. By William B. Cairns, Ph.D., Instructor in English in the University of Wisconsin. (Ginn.)

The first Part is devoted to "Style," including points of mere grammatical import, but mainly considering such qualities as may be illustrated by the sentence. The arrangement seems somewhat mixed, but the exposition is clear and forcible, and the illustrations are, in the main, useful and efficient. The second Part, occupying two-thirds of the volume, discusses the forms of composition under the general title of "Invention"—a title that does not appear to be particularly appropriate, though it has obtained standing in America. Narration is said to be of two kinds—without plot and with plot—and the latter kind, illustrated by the novel, is handled much more fully than the former kind; indeed, there is very little practical help suggested for the ordinary narrative of history—a matter that we should take to be greatly more important than novel construction. Description is much more profitably managed, though the principles and the illustrations might have been worked up together with far more effect than can come from a separate presentation, even when supported by slight general "suggestions for exercises." Much the same comment may be made on the other forms of composition. The book has good points so far as it goes, but it will not bear comparison with the first order of English works on the subject.

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The British Empire, one of the "Pictorial Geographical Readers" in "Longmans' Ship Series" (1s. 8d.), is fluently written, admirably descriptive, and judiciously and liberally illustrated. It presents a vivid idea of the various countries under British rule, with their peoples, industries, productions, &c. A very instructive and attractive book.

HISTORY.

The Tutorial History of Greece from the Earliest Times to the Death of Demosthenes. By W. J. Woodhouse, M.A. Oxon., Professor of Greek in the University of Sydney. (3s. 6d. Clive.)

Prof. Woodhouse aims at "a clear conception of the broad features of the Greek civilization and of its place in general history rather than the barren statement of the precise condition in which any particular problem stands, or the exact degree of weight to be assigned to rival theories"; and he sets aside the achievements of the Greeks in philosophy, literature, and art as matters "of too great importance to be dealt with in a book such as this, as mere appendages to political history." He has primarily in view students that "have to look to their text-book, and their text-book only, for information." However, that is no reason why the book should not be used under a teacher. While founding his work on the best authorities, Prof. Woodhouse is very independent in judgment, and he is fresh and vigorous in treatment. There are two maps and several battle plans.

History for Graded and District Schools. By Ellwood Wadsworth Kemp, Head of Department of History, Indiana State Normal School, Terre Haute, Indiana. (4s. 6d. Ginn.)

The title is not particularly attractive or explanatory (to us), but the purpose of the book is "to present a framework of history for children from six to about fifteen years of age" in such a way as "gradually to develop in pupils' minds the idea of the *unity of history*, and thus finally to lead them to feel that history is an unbroken stream of life, of which the present in general, and their lives in particular, constitute an important part." Short lists of reference books are appended to each chapter—"such books as will present not alone the political, but also the social, artistic, religious, industrial, and educational aspects of history." Mr. Kemp tells the story of the Aryans, the Egyptians, the Hebrews, the Greeks, the Romans, the Teutons, and Spanish, French, and English influences on America. He presents a General History, with much attention to the main civilizing agencies as well as to the military and political developments. The treatment is most skilful and attractive. We do not know of any general survey that can compare with this admirable volume. If it were placed in school libraries, the children would read it with avidity by themselves, under general supervision.

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(*Continued on page* 406.)

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Messrs. Bacon present (1) a mounted wall-sheet displaying the *Roman Numerals*, arranged by Frank Steeley (38 in. × 30 in.); and (2) a representation of *The Bootblack*, in the series of "Familiar Folks." Both are excellently produced.

We should add that the measurements given above are all within margins.

MISCELLANEOUS.

In *The Opportunity of Liberalism* (1s. net, Fisher Unwin) Mr. Brougham Villiers attempts to analyse briefly "the social forces which rendered the long Tory reaction of the past twenty years possible," and to sum up the difficulties and the opportunities of the position in the event of a Liberal victory at the next General Election. He takes the attitude of an independent critic at the democratic standpoint, and discusses "the town problem," "the anomalies of our economic position," and especially the question of "British agriculture." The *brochure* should be read by men of all political colours that permit themselves the liberty of independent judgment on public affairs.

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Mr. Daniel Grant, ex-M.P. for Marylebone (1880-85), presents in convenient and effective form the Liberal view of *Free Food and Free Trade* (2d., Fisher Unwin). The figures are kept in proper subordination to the argument, and their significance is strongly enforced. The pamphlet is well worth perusal by all parties in politics, or out of politics. The question is national in the deepest sense.

The *Two Lectures on the Science of Language* (1s. 6d. net, Cambridge University Press), delivered by James Hope Moulton, M.A., D.Lit. (Lond.), to the students of the University Extension at Cambridge a couple of years ago, must be acknowledged to be well worthy of permanent record. They present in popular form a vigorous and lucid sketch of a very fascinating subject, and should be interesting far beyond the circle of University or University Extension students. They are evidently the flower of wide and earnest study.

NEW EDITIONS AND REPRINTS.

Messrs. Watts have added to the "Cheap Reprints Series" issued for the Rationalist Press Association *A Modern Zoroastrian*, by the late Samuel Laing; and to the "Extra Series" *Ethics of the Great Religions*, by Charles T. Gorham (6d. each). They also publish an instructive Address, *What to Read*, by John M. Robertson—"suggestions for the better utilization of public libraries" (4d.).

Messrs. Macmillan publish a ninth edition, "revised and enlarged," of Mrs. Fawcett's well known *Political Economy for Beginners* (2s. 6d.). New examples have been taken from recent events. A simple and attractive introduction to a subject of more and more pressing importance.

Messrs. E. J. Arnold & Son issue a second edition of *Geometrical Design*—the Application of Geometrical Drawing to Decorative Work and Design—by A Drawing Inspector (2s.). The work has been thoroughly revised, many of the diagrams have been improved, and two new chapters have been added. An excellent work.

FIRST GLANCES.

MISCELLANEOUS.

Art-Workers' Quarterly. July. 2s. 6d. net. Chapman & Hall.
[One coloured and seven supplementary plates. Excellent.]

Church Questions. By G. S. Karney, M.A. 6d. net. Charles Murray.
[Substance of sermons. Second edition.]

Clair-audience, A Primer of. By J. Barker Smith, L.R.C.P. 1s. Author: 4 Holmdene Avenue, Herne Hill, S.E.

Coke Ovens, and their History. By Paul J. Mallmann, M.A. (114 and 116 Victoria Street, Westminster, S.W.).
[Paper read before the Cleveland Institution of Engineers, Middlesbrough. Elaborate illustrations.]

Deaf and Dumb. Report (1903) on the Training College for Teachers and School for Children. Association for the Oral Instruction of the Deaf and Dumb, 11 Fitzroy Square, W.
["Another year of useful and successful work."]

Earth's Sacred Cult. By J. Barker Smith, L.R.C.P. 6d. Author: 4 Holmdene Avenue, Herne Hill, S.E.

Fanny Haire, Her Dream. By Maurice C. Hime, M.A., LL.D. 6d. net. Simpkin, Marshall, & Co.
[A verified "plea for cheerfulness." Illustrated.]

Golfer, The Unlucky, His Handbook. By Maurice C. Hime, M.A., LL.D. 6d. net. Simpkin, Marshall, & Co.
[Verified hints, practical and moral. Illustrated.]

Party Government. By S. Hutchinson Harris. And an Essay on "The Lost Art of Government," by H. Hamilton Fyfe. 1s. net. Chapman & Hall.

Pestalozzianums, Neunundzwanzigster Jahresbericht des, in Zürich (1903). Zürich: Emil Rüegg.

Poverty, The State Remedy for. 1d. Standring.
[Extract from "The Elements of Social Science," with addition.]

Smithsonian Institution: Annual Report, 1902.
[Summary of year's operations and departmental reports. Extremely interesting. 670 excellent illustrations.]

St. Louis Exposition. Booklet, containing 15 photographic views of the various structures.
[Messrs. Mabie, Todd, & Bard, 93 Cheapside, E.C., will send a copy free to any reader applying by post-card and mentioning this paper. The views are very interesting: the Palace of Education is a notably fine building.]

War, Russian and Japanese, Phelps Adams on. 6d. net. Dawbarn & Ward.
["Critical, satirical, candid." Pro-Japan.]

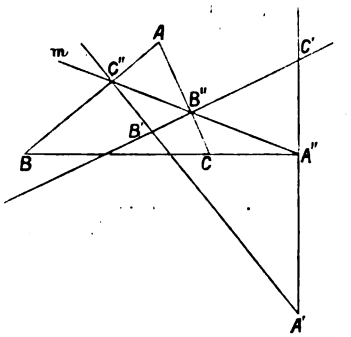
West Riding of Yorkshire, County Council: Handbook of the Education Committee. Part II., Higher Education. Sections I.–VI. Wakefield: County Hall.
[Thorough and sensible.]

MATHEMATICS.

12264. (Professor NEUBERG.) — Une droite m coupe les côtés d'un triangle ABC en trois points A″, B″, C″ tels que les perpendiculaires élevées en ces points sur BC, CA, AB forment un triangle A′B′C′ de surface donné. Trouver l'enveloppe de la droite m.

Solution by W. J. GREENSTREET, M.A.

Since BA, B′A′, ..., intersect on a line m, the joins of corresponding vertices must be concurrent in a point M. As m moves parallel to itself, M remains the centre of similitude for all triangles A′B′C′, and when one of these triangles degenerates into M, m is then a Simson-line. Hence M is on the circle ABC, and its Simson-line for ABC is parallel to m. Also, as ABC is deducible from A′B′C′ and m, just as A′B′C′ is deduced from ABC and m, it follows that M is on the circle A′B′C′, and its Simson-line for A′B′C′ is parallel to m. Since ABC, A′B′C′ have their homologous sides respectively at right angles, then, if O, O′ are the centres of their circum-circles, we see that OA and O′A′ are at right angles; and, further, OMO′ is a right angle. As m moves, A′B′C′ being of constant area, MO′ is of constant length, and the locus of O′ is a circle concentric with the circum-circle ABC. Then, since O′A′ moves parallel to itself and remains constant in magnitude, the locus of A′ is a circle, centre O″, where OO″ is equal and parallel to O′A′. Finally, the right-angled triangles OO″A and O′MO are equal; therefore O″A = OO′ = O″A′; therefore the locus of A′ passes through A. Hence m is the Simson-line of a point A′ on the circle O″ with reference to the inscribed angle ABC. Therefore it envelops a three-cusped hypocycloid.



Note by the PROPOSER.

Au sujet des triangles orthohomologiques ABC, A′B′C′, on peut voir *Mathesis*, 1886, p. 116; 1895, pp. 265–8; 1896, p. 81. La droite A″B″C″ passe au milieu de la droite joignant les orthocentres des triangles ABC, A′B′C′; le centre de similitude de ces triangles est le second point de rencontre des circonférences circonscrites.

15499. (Lt.-Col. ALLAN CUNNINGHAM, R.E. — *Revised.*) — Let $N = 111\ldots11$ consist of q^n units in the scale of $r = mq+1$, q being *prime;* then $N = Mq^n$.

Solutions (I.) *by* JAMES BLAIKIE, M.A., *and* R. CHARTRES; (II.) *by the* PROPOSER.

(I.) We have $N = 111\ldots1$, q^n factors. Let $p = q^n$. Then

$$N = \frac{r^p-1}{r-1} = \frac{(1+mq)^p-1}{mq} = \frac{1}{mq}\left(pmq + \frac{p(p-1)}{1.2}m^2q^2 + \ldots\right).$$

It has to be shown that each term of this expansion contains pq or q^{n+1} as a factor. The general term is $\frac{p(p-1)\ldots(p-x+1)}{1.2\ldots x}m^xq^x$, which clearly contains pq as a factor, when x is not a multiple of q. Consider the case when x is a power of q, or a multiple of a power of q. Let $x = aq^t$. Then the general term contains the factor q^{n-t+x}, which cannot be less than q^{n+1}, unless $t+1 > x$, or $t+1 > aq^t$, which is impossible, since $q > 1$. Thus $N = Mq^n$.

(II.) In order to avoid heavy double exponents, let R_x denote r^{q^x}, so that $R_2 = r^{q^2}$, $R_1 = r^q$, $R_0 = r$; thus $R_{x+1} = r^{q^{x+1}} = (r^{q^x})^q = R_x^q$. Here

$$N = 111\ldots1 \ [q^n \text{ units}] = (r^{q^n}-1)/(r-1) - (R_n-1)/(R_0-1).$$

Now let N be resolved into its n *algebraic* prime factors, *i.e.*,

$$N = \frac{R_n-1}{R_{n-1}-1}\cdot\frac{R_{n-1}-1}{R_{n-2}-1}\cdots\frac{R_2-1}{R_1-1}\cdot\frac{R_1-1}{R_0-1}.$$

It will be shown that each one of these n fractions contains q. Let

$$F_x = \frac{R_{x+1}-1}{R_x-1} = \frac{R_x^q-1}{R_x-1} = R_x^{q-1} + R_x^{q-2} + \ldots + R_x^2 + R_x + 1 \ [q \text{ terms}].$$

Take the term $R_x^t = (mq+1)^{q^t} = Mq+1$, where Mq means "multiple of q"; therefore $F_x = \Sigma(Mq+1) = Mq+q$ units $= Mq$. A similar argument applies to every fraction F_x, and N contains n such fractions; therefore N contains q^n.

A similar argument to the above would show that, if $N = 100\ldots01$, with (q^n-1) ciphers, in the scale of $r = mq-1$, then $N = Mq^n$. The argument shows that the limitation q = prime (stated in the Question) is unnecessary.

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15553. (Professor Nanson.)—Eliminate x, y, z from

$$ax^2+by^2+cz^2=0,$$
$$(b-c)\,lyz+(c-a)\,mzx+(a-b)\,nxy=0,\quad lx+my+nz=0.$$

Solutions (I.) *by* Thomas Muir, LL.D., F.R.S.; (II.) *by* A. M. Nesbitt, M.A., *and others.*

(I.) Probably the most direct mode of solution is first to eliminate z, and then from the two resulting equations to eliminate x and y. These equations are

$$(an^2+cl^2)\,x^2+2clmxy+(bn^2+cm^2)\,y^2=0,$$
$$\mathrm{B}lmx^2+(\mathrm{A}l^2+\mathrm{B}m^2-\mathrm{C}n^2)\,xy+\mathrm{A}lmy^2=0,$$

where A, B, C are written for $b-c$, $c-a$, $a-b$ respectively. Their eliminant is of the twelfth degree, a factor of it, n^2, being irrelevant to the original set of equations.

It is of greater interest, however, to observe the result of applying as follows the dialytic method:—From the linear equation three quadrics arise through multiplication by x, y, z: there thus is needed only one other such equation in order to have a complete set of six from which to eliminate x^2, y^2, z^2, yz, zx, xy. This want is supplied by taking the given equations in the form

$$ax\,.\,x+by\,.\,y+cz\,.\,z=0,\qquad \mathrm{C}ny\,.\,x+\mathrm{A}lz\,.\,y+\mathrm{B}mx\,.\,z=0,$$
$$l\,.\,x+m\,.\,y+n\,.\,z=0,$$

and thus deriving by elimination

$$\begin{vmatrix} ax & by & cz \\ \mathrm{C}ny & \mathrm{A}lz & \mathrm{B}mx \\ l & m & n \end{vmatrix}=0,$$

i.e., $\quad a\mathrm{B}m^2x^2+b\mathrm{C}n^2y^2+c\mathrm{A}l^2z^2-c\mathrm{C}mnyz-a\mathrm{A}nlzx-b\mathrm{B}lmxy=0.$

The eliminant as a six-line determinant thus is

$$\begin{vmatrix} a & b & c & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \mathrm{A}l & \mathrm{B}m & \mathrm{C}n \\ l & \cdot & \cdot & \cdot & n & m \\ \cdot & m & \cdot & n & \cdot & l \\ \cdot & \cdot & n & m & l & \cdot \\ a\mathrm{B}m^2 & b\mathrm{C}n^2 & c\mathrm{A}l^2 & -c\mathrm{C}mn & -a\mathrm{A}nl & -b\mathrm{B}lm \end{vmatrix}.$$

This is seen to separate into six parts arrangeable in two sets of three, viz.:—

$$-\Sigma\left\{b\mathrm{B}lm\begin{vmatrix} a & b & c & \cdot & \cdot \\ \cdot & \cdot & \cdot & \mathrm{A}l & \mathrm{B}m \\ l & \cdot & \cdot & \cdot & n \\ \cdot & m & \cdot & n & \cdot \\ \cdot & \cdot & n & m & l \end{vmatrix}\right\}-\Sigma\left\{c\mathrm{A}l^2\begin{vmatrix} a & b & \cdot & \cdot & \cdot \\ \cdot & \cdot & \mathrm{A}l & \mathrm{B}m & \mathrm{C}n \\ l & \cdot & \cdot & n & m \\ \cdot & m & n & \cdot & l \\ \cdot & \cdot & m & l & \cdot \end{vmatrix}\right\};$$

so that the non-determinant form is readily calculable and found to be

$$\Sigma bc\mathrm{A}^2l^6+\Sigma ca\mathrm{A}^2l^4m^2+\Sigma bc\mathrm{B}^2l^2m^4-2\Sigma bc\mathrm{AB}l^4m^2-2\Sigma ca\mathrm{AB}l^2m^4+\Sigma a^2\mathrm{A}^2l^2m^2n^2.$$

But the sum of the first three terms here is the product of

$$bcl^2+cam^2+abn^2\quad\text{and}\quad \mathrm{A}^2l^4+\mathrm{B}^2m^4+\mathrm{C}^2n^4\ ;$$

and, if we substitute for $\Sigma a^2\mathrm{A}^2$ its equivalent $-2\Sigma bc\mathrm{BC}$, the sum of the last three terms is with equal ease seen to be the product of

$$bcl^2+cam^2+abn^2\quad\text{and}\quad -2\mathrm{BC}m^2n^2-2\mathrm{CA}n^2l^2-2\mathrm{AB}l^2m^2.$$

Thus our final result is $\Sigma bcl^2(\Sigma \mathrm{A}^2l^4-2\Sigma \mathrm{BC}m^2n^2)$. [Rest in *Reprint.*]

15547. (Professor Sanjána, M.A.)—A central conic, whose minor axis is of given length, touches two fixed straight lines; if one focus moves on a given straight line, prove that the other moves on a hyperbola having its asymptotes parallel to the fixed lines.

Solutions (I.) *by* Frances E. Cave; (II.) *by* A. R. Richardson.

(I.) Take the two fixed lines as axes. The product of the perpendiculars from the foci on to either axis is constant, and therefore the products of the abscissæ and of the ordinates are constant. Therefore, if one focus moves along $lx+my+n=0$, the other moves along the hyperbola $l/x+m/y+n/k^2=0$.

(II.) Let $x=0$, $y=mx$ be the equations to the two tangents; b the semi-minor axis; $\xi x+y=\mathrm{C}$ the locus of one of the foci. Then we know that the product of distances of foci from any tangent is b^2; therefore

$$\mathrm{X}y'=b^2,\qquad (\mathrm{Y}-m\mathrm{X})(y'-mx')=b^2(1+m^2),$$

where (X, Y) are the points we seek, and (x', y') of the other focus.

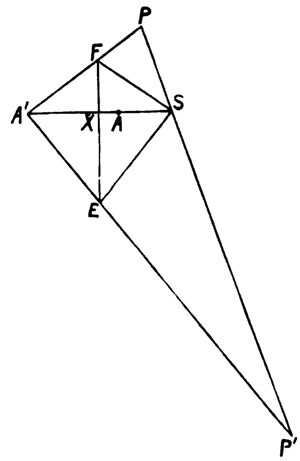
Eliminating x', y' from these two equations and $\xi x'+y'=\mathrm{C}$, we get

$$(\mathrm{Y}-m\mathrm{X})\,[b^2(1+m/\xi)-\mathrm{XC}\,(m/\xi)]=b^2\,[\mathrm{X}\,(1+m^2)],$$

i.e., an hyperbola; and, as asymptotes are parallel to terms of the second degree, they are parallel to $\mathrm{X}=0$, $\mathrm{Y}=m\mathrm{X}$.

15563. (R. F. Davis, M.A.)—Given a hyperbola whose eccentricity $=2$, prove that the circle described upon any focal chord as diameter passes through the further extremity of the transverse axis.

Geometrical Solutions (I.) *by* K. Deva Rau, B.A., *and* W. F. Beard, M.A.; (II.) *by* Professor Sanjána, M.A.



(I.) Let PSP′ be the focal chord, AA′ the transverse axis, and EXF the directrix. Join A′P and A′P′, cutting the directrix in F and E. Join FS and ES. Then FS bisects the angle A′SP, and ES bisects the angle A′SP′; therefore ESF is a right angle.

Again, the eccentricity of the hyperbola $=2$; therefore X is the middle point of SA′. Also EXF is perpendicular to SA′; therefore

$$\angle\mathrm{FA'X}=\angle\mathrm{FSX}$$

and $$\angle\mathrm{EA'X}=\angle\mathrm{ESX};$$

therefore

$$\angle\mathrm{EA'F}=\angle\mathrm{ESF}=90^\circ.$$

Therefore the circle described on PSP′ as diameter passes through A′.

[Rest in *Reprint.*]

15555. (Robt. W. D. Christie.)—Let $p=a^2+b^2$, $q=ac+bd$, $s=c^2+d^2$, $ad-bc=1$: prove $r^{2m}+1=ps$ and $r^{6m}+1=p(p-2q+s)$; and more generally $(pt+r^m)^2+1=p\mathrm{S}$, $(pt+r^{3m})^2+1=p\mathrm{T}$, where r is any primitive root of prime $4m+1$, t any integer. Establish similar equations for prime $p=4m-1$.

Solution by the Proposer.

(A) By adaptation of Euler's theorem we have

$$(ac+bd)(a^2+b^2-ac-bd)-(a^2+b^2)(ac+bd-c^2-d^2)=(ad-bc)^2=1\ldots\text{(i.)}.$$

Adapting to the prime roots, we get

$$r^m(p-r^m)-p\,[(p^2-r^{6m}-r^{2m}-2)/2p]=1\ \ldots\ldots\ldots\ldots\text{(ii.)}.$$

Now $$(ac+bd)^2+(ad-bc)^2=(a^2+b^2)(c^2+d^2),$$

i.e., $$(r^m)^2+1=ps\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1),$$

$$(r^{3m})^2+1=(p-r^m)^2+1=p^2-2pr^m+r^{2m}+1=p^2-2pq+ps$$
$$=p\,(p-2q+s)\ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2),$$

(3) and (4) follow immediately from (1) and (2).

(B) For primes $=4m-1$, we have, corresponding with (i.) and (ii.) *supra*,

$$(rac+bd)(ra^2+b^2-rac-bd)-(ra^2+b^2)(rac+bd-rc^2-d^2)$$
$$=r\,(ad-bc)^2=r\ldots\ldots\text{(iii.)}$$

when $ad-bc=1$, $\qquad r^{m+1}\,.\,r^{3m+2}-pq=r\ \ldots\ldots\ldots\ldots\ldots\ldots\text{(iv.)}.$

15216. (R. C. Archibald, M.A., Ph.D.)—The *trisectrix* of Maclaurin ($r\cos\frac{1}{3}\phi=\mathrm{C}$ or $r\sin 2\theta+a\sin 3\theta=0$), the *logocyclic* curve or *strophoide* ($r\cos\theta+a\cos 2\theta=0$), and the *cubic* of Tschirnhausen ($r^{\frac{1}{3}}\cos\frac{1}{3}\theta=a^{\frac{1}{3}}$) are nodal cubics. Express their equations in the form $\mathrm{X}^{\frac{1}{3}}+\mathrm{Y}^{\frac{1}{3}}+\mathrm{Z}^{\frac{1}{3}}=0$, where X, Y, Z are linear functions of the Cartesian co-ordinates.

Additional Solution by Professor Sircom.

In each of these curves there is but one real point of inflexion; hence two of the expressions X, Y, Z must be imaginary. The algebraical form of the first equation is

$$2x\,(x^2+y^2)+a\,(3x^2-y^2)=0.$$

This may be written $a^3=(a-2x)\,(x^2+y^2+2ax+a^2)$;

whence $$a^3=(a-2x)\,(x+\iota y+a)\,(x-\iota y+a),$$

which is the rationalized form of

$$(x+\iota y+a)^{\frac{1}{3}}+(x-\iota y+a)^{\frac{1}{3}}+(a-2x)^{\frac{1}{3}}=0.$$

The algebraical form of the second is

$$x\,(x^2+y^2)+a\,(x^2-y^2)=0.$$

The asymptote $a-x=0$ is inflexional: assume, therefore,

$$(lx+m\iota y+a)^{\frac{1}{3}}+(lx-m\iota y+a)^{\frac{1}{3}}+(a-x)^{\frac{1}{3}}=0.$$

Rationalizing and equating coefficients, we have for l, m

$$(2l-1)^3-27l^2=9\,(l+1)^2=27m^2,$$

which give $l=\frac{5}{4}$, $m=\frac{3}{4}\sqrt{3}$, and then

$$(5x+3\sqrt{3}\iota y+4a)^{\frac{1}{3}}+(5x-3\sqrt{3}\iota y+4a)^{\frac{1}{3}}+(4a-4x)^{\frac{1}{3}}=0.$$

The third is $$(4a-x)^3=27a\,(x^2+y^2).$$

This can be written $\quad(2x-8a)^3=-27\,.\,8a\,(x^2+y^2),$

which is the rationalized form of

$$(x+\iota y)^{\frac{1}{3}}+(x-\iota y)^{\frac{1}{3}}-2a^{\frac{1}{3}}=0$$

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15604. (Professor Lauvernay.)—Construire un triangle rectangle connaissant en position une droite Δ sur laquelle se trouve l'hypoténuse, le centre Ω du cercle enveloppant les cercles ex-inscrits au triangle ainsi que son rayon ρ.

Solution by Professor Sanjána, M.A.

The circle enveloping the escribed circles is the nine-point circle, and the centre of this is the mid-point of the median to the hypotenuse. Hence, with Ω as centre and ρ as radius, describe a circle, cutting the right line Δ in M; draw the diameter MΩA, as also the diameter LΩN parallel to Δ; join AL, AN, and produce these to meet Δ in B and C. Then ABC is the required right-angled triangle.

As the circle cuts Δ in two points (in general), there are two triangles given by the solution, which are images of one another with regard to the perpendicular from Ω on Δ.

15586. (*Communicated by* J. L. S. Hatton.)—Evaluate the determinant

$$\begin{vmatrix} a & b & c & d & e & f & g & h \\ h & a & b & c & d & e & f & g \\ g & h & a & b & c & d & e & f \\ f & g & h & a & b & c & d & e \\ h & g & f & e & d & c & b & a \\ a & h & g & f & e & d & c & b \\ b & a & h & g & f & e & d & c \\ c & b & a & h & g & f & e & d \end{vmatrix}.$$

Solution by C. M. Ross.

Taking ω_r to be any root of the equation $x^8-1=0$, and adding to the first column the sum of the constituents of the remaining columns multiplied by $\omega_r, \omega_r^2, \omega_r^3, \omega_r^4, \omega_r^5, \omega_r^6, \omega_r^7$, the result is an equivalent determinant in which the first column is

$$a+\omega_r b+\ldots+\omega_r^7 h \quad \ldots\ldots\ldots\ldots\ldots\text{(i.)},$$
$$h+\omega_r a+\ldots+\omega_r^7 g \quad \ldots\ldots\ldots\ldots\ldots\text{(ii.)},$$
$$\ldots\ldots\ldots\ldots$$
$$b+\omega_r c+\ldots+\omega_r^7 a \quad \ldots\ldots\ldots\ldots\ldots\text{(viii.)}.$$

But the expression (ii.) equals (i.) multiplied by ω_r, (iii.) equals (i.) by ω_r^2, and so on.

Hence (i.) is a factor of the determinant, and, as the product of 8 factors each similar to (i.) contains the term $+a^8$, the value of the given circulant is $\prod_{r=1}^{r=8}(a+\omega_r b+\ldots+\omega_r^7 h)$.

15589. (R. Chartres.)—Express $m^n/(mr-1)$ as a radix fraction in scale r.

Solutions (I.) *by* Rev. T. Wiggins, B.A.; (II.) *by the* Proposer.

(I.) $$\frac{m^n}{mr-1}=\frac{1}{r}\,\frac{m^n r-m^{n-1}+m^{n-1}}{mr-1}=\frac{m^{n-1}}{r}+\frac{1}{r}\,\frac{m^{n-1}}{mr-1}$$
$$=\frac{m^{n-1}}{r}+\frac{m^{n-2}}{r^2}+\frac{m^{n-3}}{r^3}+\ldots+\frac{m}{r^{n-1}}+\frac{1}{r^n}.$$

(II.) Since $1/(mr-1)=.\dot{a}bc\ldots m\dot{1}$ in scale radix r, therefore

$$m/(mr-1)=.\dot{1}abc\ldots\dot{m}.$$

Hence $m^n/(mr-1)$ can be found by putting the last n figures first and prefixing the integral part, if any. Therefore $1/x\equiv 1/(pq-1)$ will in scales p and q (1) have unity for last figure; (2) multipliers q and p respectively; (3) the same number of recurring figures in scales $\left(mx+\frac{p}{q}\right)$, m = any positive integer; (4) p^n-1 and q^n-1 will be divisible by $pq-1$, n being the number of recurring figures; (5) and, if $pq-1$ be a prime number and $n=pq-2$, we have Fermat's theorem.

9811. If masses P, Q, and R be placed at the vertices A, B, and C respectively of the triangle of reference, show that the trilinear equations to the principal axes at the centre of gravity of the masses will be

$$x+my+nz=0 \quad\text{and}\quad l'x+m'y+n'z=0,$$

where $l:m:n$ and $l':m':n'$ are determined by the equations

$$P(l/a)+Q(m/b)+R(n/c)=0,\quad P(l'/a)+Q(m'/b)+R(n'/c)=0,$$
$$P(ll'/a^2)+Q(mm'/b^2)+R(nn'/c^2)=0,$$

and

$$ll'+mm'+nn'-(mn'+m'n)\cos A-(nl'+n'l)\cos B-(lm'+l'm)\cos C=0,$$

and that at any point the principal axes are conjugate (*i.e.*, each passes through the pole of the other) with respect to the conics

$$Pl^2/a^2+Qm^2/b^2+Rn^2/c^2=0$$

and

$$l^2+m^2+n^2-2mn\cos A-2nl\cos B-2lm\cos C=0$$

(the circular points at infinity).

Solution by A. M. Nesbitt, M.A.

If $(\bar\alpha, \bar\beta, \bar\gamma)$ represent the actual values of the co-ordinates of the centre of mass, we have $\bar\alpha\,\Sigma P=P(2\Delta/a),\ldots$; so that $\bar\alpha:\bar\beta:\bar\gamma=P/a:Q/b:R/c$. Hence, since this point lies on both the given lines, we get the first two relations in the Question.

Further, the perpendiculars from A to the two given lines are $(l\,2\Delta/a)/[\phi(lmn)]$ and $(l'\,2\Delta/a)/[\phi(l'm'n')]$, where

$$[\phi(l,m,n)]^2=\Sigma l^2-2\Sigma mn\cos A.$$

Expressing that the products of inertia vanish, we have

$$Pll'/a^2+Qmm'/b^2+Rnn'/c^2=0,$$

which is the third relation to be established, and this applies whether the given lines intersect in the centre of mass or not. The fourth merely ensures that the two given straight lines are at right angles.

Further, the trilinear equation to the conic given tangentially by $Pl^2/a^2+\ldots+\ldots=0$ is $QRx^2/(b^2c^2)+\ldots+\ldots=0$, and the condition that (l,m,n), (l',m',n') should be conjugate with respect to this is

$$\begin{vmatrix} QR/(b^2c^2) & . & . & l \\ . & RP/(c^2a^2) & . & m \\ . & . & PQ/(a^2b^2) & n \\ l' & m' & n' & . \end{vmatrix}=0,$$

and, if we respectively multiply the four rows by Pl'/a^2, Qm'/b^2, Rn'/c^2, and $-(PQR/a^2b^2c^2)$, their sum is zero in every column; so that the relation is satisfied.

The final part of the theorem is of course evident *a priori*; or, it may be established thus. The tangential equation $\Sigma l^2-2\Sigma mn\cos A=0$, when translated to trilinears, becomes $\Sigma x^2\sin^2A+2\Sigma yz\sin B\sin C=0$, being, in fact, $(\Sigma x\sin A)^2=0$; and the condition that (l,m,n), (l',m',n') should be conjugate to this is

$$\begin{vmatrix} \sin^2A & \sin A\sin B & \sin A\sin C & l \\ \sin A\sin B & \sin^2B & \sin B\sin C & m \\ \sin A\sin C & \sin B\sin C & \sin^2C & n \\ l' & m' & n' & . \end{vmatrix}=0.$$

Multiplying the first three rows respectively by $l'-m'\cos C-n'\cos B$, $m'-n'\cos A-l'\cos C$, $n'-l'\cos B-m'\cos A$ and adding, we get zero in every column. Hence the relation is satisfied.

10390. (E. Césaro.)—Démontrer que la chaînette d'égale résistance, qui a pour équation intrinsèque $\rho=\frac{1}{2}a(e^{s/a}+e^{-s/a})$, est la seule ligne dont le rayon de courbure soit égal au segment de la normale intercepté par deux droites fixes parallèles.

Solution by Frances E. Cave.

Since radius of curvature = segment of normal intercepted between two parallel fixed straight lines, therefore its projection on their perpendicular distance is constant; therefore $\rho\cos\psi=$ constant $=a$, say, where ψ is the inclination of the tangent to the fixed lines.

Put $\sec\psi=\cosh u$; then $ds=a\,du$; therefore $u=s/a$, if s be measured from the point where ψ vanishes; therefore

$$\rho=a\cosh s/a=\tfrac{1}{2}a(e^{s/a}+e^{-s/a}).$$

15080 & 15368. (Professor Nanson.)—(15080.) Lines drawn through the vertices of a triangle Δ divide the angles into the segments α, α'; β, β'; γ, γ', and form a triangle Δ'. If R, R' are the radii of the circum-circles of Δ, Δ', prove that

$$\frac{R'}{R}=\frac{\sin\alpha\sin\beta\sin\gamma-\sin\alpha'\sin\beta'\sin\gamma'}{\sin(\beta+\gamma')\sin(\gamma+\alpha')\sin(\alpha+\beta')},$$

and deduce the theorems of Ceva and Menelaus.

(15368.) If lines drawn through the vertices of a triangle Δ divide the angles into segments α, α'; β, β'; γ, γ', and form a triangle of area Δ', then

$$\frac{\Delta'}{\Delta}=\frac{(\sin\alpha\sin\beta\sin\gamma-\sin\alpha'\sin\beta'\sin\gamma')^2}{\sin(\beta+\gamma')\sin(\gamma+\alpha')\sin(\alpha+\beta')\sin(\alpha+\alpha')\sin(\beta+\beta')\sin(\gamma+\gamma')}.$$

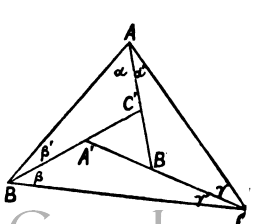
Solutions by the Proposer.

Let $AB'=x$, $AC'=x'$, ..., so that $a'=x-x'$, ...; then, expressing that the large triangle is the sum of the four small triangles, we have

$$\frac{\Delta}{\Delta'}=1+\frac{y'z}{b'c'}+\frac{z'x}{c'a'}+\frac{x'y}{a'b'}=\frac{xyz-x'y'z'}{a'b'c'}.$$

Now $z:y'=a=\sin\beta:\sin\gamma':\sin A',\ldots$; therefore

$$xyz:x'y'z':abc$$
$$=\Pi\sin\alpha:\Pi\sin\alpha':\Pi$$



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therefore $$\frac{R'}{R} = \frac{a'b'c'\Delta}{abc\Delta'} = \frac{\Pi \sin\alpha - \Pi \sin\alpha'}{\Pi \sin A'} \quad \ldots\ldots\ldots\ldots(1),$$

which gives the formula in Question 15080.

Again $\Delta : \Delta' = bc \sin A : b'c' \sin A' = \ldots$. Hence, from (1) we get

$$\Delta'/\Delta = (\Pi \sin\alpha - \Pi \sin\alpha')^2/(\Pi \sin A \, \Pi \sin A'),$$

which gives the formula in Question 15368.

Further, we have $\Pi \sin\alpha = \Pi \sin\alpha'$ or $xyz = x'y'z'$, when $R' = 0$ or when $R = \infty$, *i.e.*, when the lines through A, B, C are concurrent, or when A, B, C are collinear; and thus we have the theorems of Ceva and Menelaus.

For other solutions see *Reprint*, New Series, Vol. III., p. 74; Vol. V., p. 48.

QUESTIONS FOR SOLUTION.

15623. (G. H. Hardy, M.A.)—Prove that

$$e^x - c = (1-c)\, e^{\frac{1}{2}x} \Pi [1 - x/\log c],$$

the product sign applying to all the factors formed by taking different values of $\log c$, and its convergence being secured by associating the factors appropriately.

15624. (D. Biddle.)—In a cubic equation of form $x^3 - qx - r = 0$, r is the product of two primes. Show what numerical value to attach to q in order that the smaller factor of r may be one of the roots; also find the remaining roots, and prove that Cardan's method does not enable us to solve any given equation of the particular sort, unless the larger factor of r exceed the square of half the smaller one.

15625. (Professor Nanson.)—Resolve into three factors the x dialytic eliminant of the $\frac{1}{2}n(n+1)$ equations $A_pB_q + A_qB_p = 0$, where

$$A_p \equiv \Sigma_r a_{pr} x_r, \quad B_p \equiv \Sigma_r b_{pr} x_r, \quad \text{and} \quad p, q, r = 1, 2, \ldots, n.$$

15626. (R. Chartres.)—If C_r, D_r be the combinations of n and $2n$ things respectively taken r together, find the sum of

$$1 + (C_1)^2/D_2 + (C_2)^2/D_4 + (C_3)^2/D_6 + \ldots.$$

15627. (A. H. Bell.)—Give a formula for all integral right-angled triangles where the difference between the sides containing the right angles is 7.

Examples: 5, 12, 13; 8, 15, 17; ....

15628. (Robert W. D. Christie.)—If $x_1^2 + 1 = p_1 y^m$ for all integal values of m, then $x_n^2 + 1 = p_n y^m$ ad inf., generalize.

E.g.: $239^2 + 1 = 2 \cdot 13^4$; then $85922^2 + 1 = 5 \cdot 17 \cdot 3041 \cdot 13^4$ ad inf.

15629. (A. W. T.)—A number is raised to the power (-1) and reduced to a decimal. It is found that the original number is just n times the digit nearest the decimal point. Find the limits between which the number lies.

15630. (Professor Neuberg.)—Résoudre les systèmes

(1) $\sin x = a\cos y, \quad \sin y = b\cos z, \quad \sin z = c\cos x$;

(2) $\sin x = a\tan y, \quad \sin y = b\tan z, \quad \sin z = c\tan x$.

15631. (J. J. Barniville, B.A.)—Having $u_n = 5u_{n-1} - 5u_{n-2} + u_{n-3}$, prove that

$$\frac{1}{4} + \frac{1}{19} + \frac{1}{75} + \frac{1}{284} + \frac{1}{1064} + \ldots = \frac{34}{25} - \frac{3\sqrt{3}}{5},$$

$$\frac{1}{5} + \frac{1}{20} + \frac{1}{76} + \frac{1}{285} + \frac{1}{1065} + \ldots = 2 - \sqrt{3},$$

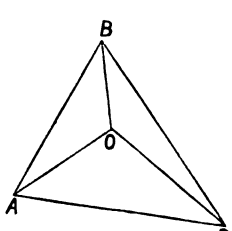
$$\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{6.7} + \frac{1}{21.22} + \ldots = \frac{2}{5}\sqrt{3},$$

$$\frac{1}{2.3} + \frac{1}{9.10} + \frac{1}{35.36} + \frac{1}{132.133} + \ldots = \frac{4}{3} - \frac{2}{\sqrt{3}}.$$

15632. (R. Tucker, M.A.)—ABC is a triangle; d, e, f are the mid-points of the sides, and D, E, F the feet of the perpendiculars on the sides BC, CA, AB. De, Df; Ef, Ed, Fe, Fd are joined, and produced, if necessary, thus forming two isoscelian triangles, viz., positive $\alpha\beta\gamma$, negative $\alpha'\beta'\gamma'$. Prove that these triangles and ABC have a common centre of perspective.

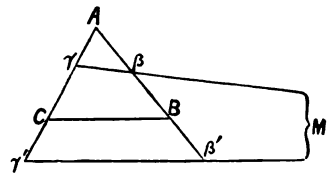
15633. (James Blaikie, M.A.)—If a straight line drawn through the circum-centre of a triangle ABC meet BC, CA, AB in P, Q, R, prove that the circles described on AP, BQ, CR as diameters concur in two points, one on the circum-circle, the other on the nine-point circle, and that their common chord passes through the orthocentre.

15634. (C. Bickerdike.)—In the triangle ABD there are given the sides BA, BD and the included angle ABD: required to draw the lines AO and OD so that the angles AOB and DOB may be equal.



Note.—This question was published in the *Ladies' Diary*, 1727, and the solution given is a trigonometrical one of the fourth degree. A geometrical one is required.

15635. (Professor Cochez.)—On donne un triangle ABC; on porte sur AB et AC les segments $A\beta$, $A\gamma$ tels que $A\beta/A\gamma = K$, puis $B\beta' = A\beta$ et $C\gamma' = A\gamma$. Trouver le lieu du point M de rencontre des droites $\beta\gamma$ et $\beta'\gamma'$.



15636. (C. E. Youngman, M.A.)—Given two circles and a point, draw two parallel tangents, one to each circle, equidistant from the point.

15637. (C. E. Hillyer, M.A. Suggested by Question 14111, Vol. LXXI.)—Prove that the mid-points of the segments intercepted by the axes of a conic on the sides of a self-conjugate triangle are collinear; and that the circles described on these segments as diameters cointersect on the circum-circle of the triangle.

15638. (A. M. Nesbitt, M.A.)—The normals to a parabola at P and P′ meet the axis in G and G′. If H be the mid-point of GG′, prove geometrically that HP = HP′.

15639. (A. R. Richardson.)—α, β, γ, δ are four straight lines; F is a fixed point, and C a fixed conic having F as focus. It is required to draw three conics such that δ is a common tangent to all, F is a focus, their remaining common tangents touch the fixed conic and each touches one of the fixed lines α, β, γ.

15640. (Professor Sanjána, M.A.)—Trace the curve $y = x \log(\sin x)$; and show how to obtain the values of its minimum ordinates.

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12088. (Professor Cavallin, M.A.)—Find the value of the integral

$$\int_0^{\frac{1}{2}\pi} \left\{ \frac{1}{[1-(a+b\cos\theta)^2]^{\frac{1}{2}r}} + \frac{1}{[1-(a-b\cos\theta)^2]^{\frac{1}{2}r}} \right\} \sin^r\theta \, d\theta,$$

where $a = \cos\alpha\cos\beta$ and $b = \sin\alpha\sin\beta$ for $r = 1, 2$, and, if possible, generally.

12085. (Professor Dellac.)—Étant données deux forces P, Q non situées dans un même plan, trouver leur résultante générale, la position de l'axe central de réduction et la grandeur du couple minimum. Discuter en supposant que l'angle des forces restant constant, ainsi que la force P, la force Q varie de $-\infty$ à $+\infty$.

12053. (Professor Sylvester.)—Given an equation-system (six equations to find six quantities) as follows:—

$$x + y + z = u, \quad \xi + \eta + \zeta = -n \quad \ldots\ldots\ldots\ldots(1, 2),$$

$$i(y+z) + j(z+x) + k(x+y) = xy + xz + yz - \xi\eta - \xi\zeta - \eta\zeta \ldots\ldots(3),$$

$$= i(\eta+\zeta) + j(\zeta+\xi) + k(\xi+\eta) \ldots\ldots(4),$$

$$iyz + jzx + kxy = xyz - \xi\eta\zeta = i\eta\zeta + j\zeta\xi + k\xi\eta \ldots\ldots(5, 6):$$

show that there are in all seven solutions which break up into two groups, one a group of three determinable by a cubic equation, the other a group of four subdivisible into two pairs depending on the solution of a double quadratic equation. Also find what happens to the two systems of solutions when two of the coefficients i, j, k become equal to one another.

12083. (W. S. B. Woolhouse, F.R.A.S.)—If five points be taken at random on the surface of any convex quadrilateral, prove that the probability that they will be the corners of a pentagon having one, and one only, re-entrant will be $\frac{5}{8}$.

12194. (Professor Orchard, M.A., B.Sc.)—A negatively charged sphere, of potential V and of radius 1, is placed, by an insulating handle, in contact with a positively charged hemisphere of potential V′ and of radius 2. Find the electric density upon each.

12211. (Rev. T. R. Terry, M.A.)—If a and b are any positive quantities, find the sum of all the fractions $ab/[b + s(a+b)]$, where s may be zero or any integer positive or negative.

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss Constance I. Marks, B.A., 10 Matheson Rd., West Kensington, W.

COLLEGE OF PRECEPTORS.—CERTIFICATE EXAMINATION, Midsummer, 1904.

Erratum.—In the Honours Division of the Third Class (Boys) List, J. Thayer, Lindisfarne College, Westcliff-on-Sea, should appear in the bracket Crane–Taylor, not in the bracket Bancroft–Walker.

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Williams & Norgate's List.

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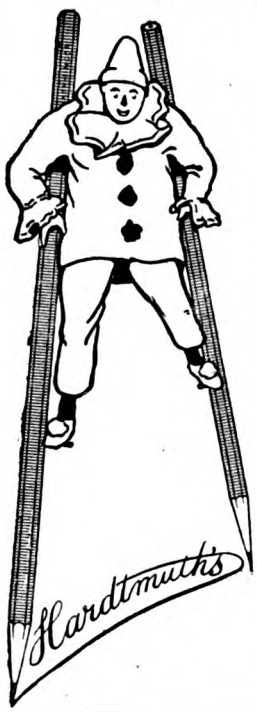

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THE

EDUCATIONAL TIMES,

AND

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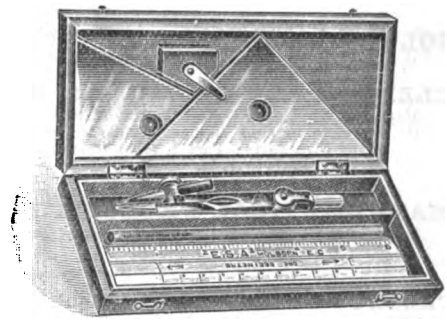

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The Educational Times.

Inspection of Private Schools.

In another column we publish some very useful notes on the inspection of private secondary schools by the Board of Education. Private teachers will be grateful to "One of H.M. Inspectors" for the trouble he has taken to explain so clearly the method of procedure. It may cause surprise to some readers to learn that "at least four or five months may elapse between the application for the inspection and the receipt of the report"; but those who have waited for a response to their application for admission to the Teachers' Register will be quite prepared for the delay, though they may not understand the reason for it. After all, the sooner the application is made the sooner will the report be available.

At one time the impression obtained that a favourable inspection by the Board of Education would carry with it the stamp of efficiency. This was much to be desired. Efficient schools would then have been authoritatively distinguished from the inefficient; the inefficient would have had a powerful inducement to become efficient; and, in making a survey of secondary schools, the Local Authority would have had no difficulty in determining what schools should receive their favourable consideration. Apparently, however, the Board of Education found it practically impossible to set up any general standard of efficiency. It is quite conceivable that, if a low standard were adopted, a school might claim to be efficient and yet be unable to meet *the* requirements of its neighbourhood; while, on the other hand, a high standard of efficiency might shut out from consideration many schools efficient in their way and capable of development. By the way, it is often too readily assumed of private schools that they are *not* capable of development.

But, if the inspection by the Board of Education omits all mention of efficiency, it may be wondered what, then, is the meaning of the term used by so many private schools—"Recognized by the Board of Education." If this question were referred to the Board, the reply would probably be that the term "recognized" has been wrongly used without qualification, and that it should be stated whether the school is recognized for the purpose of the registration of teachers or of the training of teachers. The schools recognized for the training of teachers are so few that, with possible exceptions, it may be generally stated that there are no private schools recognized by the Board of Education except for the purpose of registration of teachers. This recognition may be the result of an inspection of possibly less than an hour's duration by one inspector, or it may be the result of a detailed inspection. But, even after a detailed inspection, no mention will be made of efficiency, however favourable H.M. Inspector's report may be. There is no recognition for efficiency by the Board of Education.

It seems that the question is not whether a school is efficient or not efficient in the independent sense, but simply whether it is suitably efficient according to the requirements of the neighbourhood in which it is placed. The Local Authorities are called upon to determine this, and where they have intimated that they will base their decision upon the report of the Board of Education Inspectors it will be to the interest of every private school to submit to their inspection. Some Local Authorities, however, are making an independent inspection, while others are prepared to receive as evidence of efficiency the reports of inspectors appointed by the College of Preceptors or by the universities.

Members of the College will naturally incline to their own inspection, which is admitted to be searching, yet sympathetic, while the work is quickly done by inspectors who have mostly also had experience under the Board of Education or the universities, or both. Moreover, previous inspection by the College is a valuable guide to those who wish to be prepared for subsequent inspection by the Board. Certain is it that very few private schools regardful of the future can dispense altogether with inspection by some recognized body, and it will be sound policy for most of them to get inspected as soon as possible. To rely on being "Recognized by the Board of Education" (*i.e.*, for the purpose of the registration of teachers) is to remain willingly blind to the rapid progress of events in connexion with secondary education.

There are, it must be acknowledged, various sound reasons why private teachers should feel reluctant to surrender any

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tittle of their independence or to submit to any external interference between themselves and their patrons. Indeed the more efficient they are in the general educational sense—the more thoroughly they enter into the ideas that rule the practical life of the time—the more averse will they naturally be to submit to tests that are set up under a system less flexible, more generally applicable, and holding somewhat tightly to time-honoured traditions. We are satisfied, however, that doubts on this score are mistaken. The Board itself, we are persuaded, takes a liberal view of the situation, and the Board's Inspectors are very unlikely to exercise their powers in an arbitrary or pedantic manner. The whole of the circumstances imperatively demand broad views, and everybody is, or should be, fully alive to the importance of allowing independent enterprise the freest possible scope.

On the other hand, it is clear that the private schools must in the main get fitted somehow into efficient co-ordination with the general scheme of national education. Some, of a markedly distinctive character, may go their own way unharmed; but the vast majority will, no doubt, wisely set themselves to co-operate in their own sphere with the general public system in their localities. The first step is inspection. And the luminous and careful Memorandum we publish in another column shows how simple a matter this is, and how important.

NOTES.

In another column we print the full text of the new Regulations just issued by the Board of Education on the teaching of the English Language and Literature in Secondary Schools. They seem to be very judicious—exhibiting a scheme that will secure systematic courses, and yet taking care that it shall be most flexible. Both texts for reading and exercises in connexion with the texts are to be graduated over a period of four years—the ages of 12–13 to 15–16 inclusive. Given the faculty of free reading, a specific graduation, such as is aimed at, ought to expand largely the ground covered by the pupils in the time, as well as to render the results much more effective: no principle is more important than the reading of the right class of book at the right stage. "The Board desire to leave freedom and wide scope to schools with regard both to texts and to methods of teaching": here is the right keynote, and we do not doubt that the Inspectors will scrupulously bear it in mind. "But the Board would strongly urge schools not to provide elaborately annotated texts for the use of the scholars": here again is a provision we cordially welcome, in view of the appalling industry of some of the current commentators, which may be very useful to teachers, but daunts scholars and overwhelms the text. "Paraphrase" also we should gladly delete, unless Inspectors apply particular attention to securing that it shall be a more rational exercise than we have conclusive reasons for believing that it many a time is. The burden of formal grammar also calls for relief. However, the general scope of the regulations is excellent to start with, and practice will naturally soon work any desirable modifications in detail.

The *Speaker* of September 17 offers four important articles on different aspects of secondary education by well known writers of experience. Mr. J. L. Paton thinks that neither Mr. Weisse in the *Contemporary*, nor Mr. Cholmeley in the *Independent Review*, nor yet Mr. Wells in his tilt against the curriculum and athleticism, has touched "the real mischief of our public-school system." To Mr. Paton's mind, "the mischief is not so much in the schools themselves as in the fact of their separateness from the communal life of the people"; and "the result of this severance affects us in three different ways":

> In the first place, it means that our Local Government Authorities in the various towns and cities have hitherto felt no sense of responsibility in regard to anything higher than primary instruction, and, now the responsibility is thrown upon them by the new Act, the men who are organizing the new developments are, in many cases, men who have never themselves attended a secondary school, hardly know what secondary education is, and at the best realize it only as a system of instruction, not having the faintest conception of all those character-forming influences outside the class-room which form the best feature of our national tradition in matters educational. This is the result of the higher education of the country being done, for the most part, outside the local community to which the children belong. The apathy we deplore; the lack of local interest and local pride are the price we pay for the boarding-school system of the country. Worse than this is the separateness of school from home . . . an evil not capable of statistical demonstration, but one of the subtlest factors in the degeneration of our home life. In the third place, the fact that our greatest schools are boarding schools means a gulf of separation between the boarding-school and the day-school system. This has meant, in effect, the degradation of the day school; for, broadly speaking, no large day schools have risen to the first rank of efficiency, except where there have been generous endowments to help them.

"The great problem before us at the present time is to get this gulf spanned." Most of all, it is important "to link on the new development to the old, and to infuse into it all that is best in our cherished national system."

Passing by with respectful mention merely Prof. Phillimore on the classics and Mr. S. E. Winbolt on the difficulties of assistant masters with the Board of Education, we come to Mr. F. W. Aveling on the position of the private school in secondary education. Mr. Aveling cites interesting and impressive statistics:

> People scarcely realize that to-day the great bulk of secondary education in England is done in *private* schools. Taking the Blue Book returns for 1897, we find that private enterprise provides over 90 per cent. of these schools, and caters for over 65 per cent. of the pupils. Local Authorities only provide 4·1 per cent. of the schools, and cater for 17·4 of the pupils. The endowed schools provide only 2·7 per cent. of the schools for 7·5 per cent. of the pupils. Over four-fifths of the secondary schools for girls are under private management.

Here is an array that must command the respect of Local Authorities, were it only on the grounds of expense, even though private schools were compelled to contribute to their own extinction. Among other things, Mr. Aveling points out that the private-school teacher "does not ask for money from the public purse, save in the matter of scholarships won being holdable at his school, and perhaps an occasional grant of apparatus"—in both which cases there is really an adequate *quid pro quo*.

"The older I get the less I believe in University degrees as a test of capacity," Sir William Ramsay is reported to have said, speaking in New York. The proposition has a ring of comfort to the ear of the non-university man, who will probably not take the trouble to analyse it, or even

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imagine that it needs analysis. A university degree seems to be a compendious way of marking a complex series of facts: it certifies some particular course of study, carried out under particular conditions, and approved as successful under certain prescribed regulations. The same degree may in fact stand for a remarkable variety of such circumstances, and even for astonishing differences of acquirement and achievement within the very same range of conditions: a Scottish M.A. has a vastly different meaning from an English M.A., and the wooden spoon gets his B.A. as well as the Senior Wrangler. The meaning of any given university degree, therefore, is to be sought in the aggregate of circumstances under which it was granted, and not in any vague general impression. Now it will hardly be contended that a university degree may not be obtained without anything that can reasonably be styled "capacity" in the successful student. But, even where the student shows undoubted "capacity," one must go on to inquire what sort of capacity. The capacity of the Senior Wrangler is one thing; the capacity of the First Class Classic or Natural Science man is another thing: and neither the one nor the other is a very trustworthy guide to capacity in practical affairs. These discriminations are, of course, ignored in what we are pleased to call practical administration, and, when they vindicate themselves, there is incredulous surprise. Still, there can surely be no question that a man with a university degree is a more capable man than he would be if he had not gone through the course and conditions of his university training. "Dolus latet in generalibus."

Dr. Frederic Rose, H.M. Consul at Stuttgart, has sent over another luminous and instructive report, on "Commercial Education in Germany," which has just been published by the Foreign Office. He traces the movement for the provision of commercial instruction from the beginning of the eighteenth century, but gives special attention to more recent aspects developed under the enormous changes in industry and commerce witnessed during the past half century. While the four commercial universities display much diversity in organization, management, financial status, and other details, they all possess the distinctive academic character of the German university system: they exact a high standard of preliminary educational qualifications, they take their stand well above the level of the commercial schools, and they have ample liberty of working within the general plans and directions prescribed. Their success is certified by the proposals for more of them: at Berlin, Hamburg, and Hanover in North Germany, and at Münich, Nuremberg, Stuttgart, and Karlsruhe in South Germany. Dr. Rose emphasizes the fact that the initiative for their foundation has been taken by Chambers of Commerce and Municipalities, not by the Governments of the German States; and he deals drastically with current objections to them. He also reviews fully the schools for secondary commercial instruction, especially the commercial continuation schools, the most numerous class. "With regard to the details of the instruction," he says, "it is truly remarkable how all branches of knowledge bearing upon the subject — technical, technological, legal, economic, linguistic, geographical, historical, and mathematical—are condensed and focussed upon the one central and prevailing purpose of commercial utility."

We are all familiar with the use of distinctive type, often coloured (usually red), to impress upon pupils various peculiarities—say, the inflexions of grammar or the irregularities of spelling. In blackboard work, too, children are supposed to be effectively impressed by bright colours. Now Mr. William Taylor, of Yale University, recants belief in the educative value of such colour devices, in a striking article in the *Journal of Pedagogy* for June last. He explains how he devised testing experiments in spelling, and sets out the results. On one system, "the effect of the red letter in confusing or clarifying the word taken as a whole" was not marked either way, "though, if anything, the old method of printing has rather the best of it." On another method of comparison, the conclusion was that, "unless special attention is called to the purpose of the colour, little or no gain comes from its use."

> And when the attention is thus particularly called to its purpose the value lies not so much, in all probability, in the colour contrast as in the fact that the colour is a mechanical aid to discrimination. It is just possible that even under the latter circumstances it would prove to be more confusing than beneficial.

Further experiments of the latter kind are in progress in Yale Psychological Laboratory. There must be some experience available in this country, if somebody would only put it into form and publish it.

Hygiene is a subject of active interest at the present time in educational circles. Apparently there are places in England where the teaching of hygiene has not made much progress. We cut the following paragraph from the *Daily News* of August 27:—

> Considerable sensation was caused at the meeting of the Eaton Bray Rural District Council, held at Leighton Buzzard yesterday, by the sanitary inspector's statement that some of the villagers drink water from the public sewers. In another case he said he had seen water taken from a stream in which was a dog's carcass, which was simply pushed aside by the villagers in order to get the water. The typhoid epidemic which prevails at Eaton Bray and at the neighbouring village of Edlesborough is now being inquired into by a Local Government Board Inspector, who is making a tour of the district and taking note of its sanitary defects.

Oh, yes; but why are not such sanitary defects anticipated? And how is it possible that such things as the sanitary inspector is said to have reported can be done in this country and in this age? Something deeper than the teaching of hygiene seems to be needed at Eaton Bray.

Sir James Crichton Browne delivered a rousing and humorous presidential address to the Provincial Conference of the Sanitary Inspectors' Association at Bournemouth (September 9). With all the progress that has been made he still contended for the need of "redoubled sanitary energy, and therefore of improved education for the sanitary inspector." Indeed, he thought the time had come for the universities to take up sanitary education. He said:

> Why should not the University of London establish a school or department of hygiene, in which, by lectures and demonstrations and in well equipped laboratories and museums, instruction might be given in all those branches of study which it was advisable for sanitary

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inspectors to pursue? Why should it not examine those who had gone through the prescribed course of study, and bestow on such of them as had proved proficient its licence or certificate, which, coming from such a body, would be valuable to the recipient and often also to the public authorities having sanitary appointments to bestow. The curriculum of the school would have to be liberal and elastic; for we should aim at gradually bettering our sanitary inspectors in knowledge and in social position.

With this we may link the contention of Miss Alice Ravenhill (in the September *Monthly Review*) that "the great resources of all our leading universities should be available to students of hygiene. College courses in sanitary science," she goes on to say, "have been established in universities of high standing in the United States, and have amply justified their position. It will be a day of good omen for this country when popular opinion secures a similar step." The day may not be so very far distant; Sir James Crichton Browne "discerns on all hands a new, an earnest, an intelligent interest in health questions."

SUMMARY OF THE MONTH.

A REPRESENTATIVE of the *Daily Chronicle* has been inquiring what has become of the South Kensington "Charlottenburg" scheme. The Imperial College of Technology (he says) will be in no way a copy of Charlottenburg, but will be a teaching and examining college of applied science—of engineering in all its innumerable branches of metallurgy, chemical technology, hydraulics, and so on—by no means necessarily adopting German methods. As to its magnitude, some idea may be gained from the fact that the object is not only to supplement, but actually to include and co-ordinate, such organizations as the Royal College of Science (including the School of Mines) and the Central Technical College. At present the project is under consideration by a Committee of the Board of Education appointed "to inquire into the present working of the Royal College of Science, including the School of Mines; to consider in what manner the staff, together with the buildings and appliances now in occupation or in course of construction, may be utilized to the fullest extent for the promotion of higher scientific studies in connexion with the work of existing or projected institutions for instruction of the same character in the Metropolis or elsewhere; and to report on any changes which may be desirable in order to carry out such recommendations as the Committee may make." The report of this Committee is expected at least before the end of the year. So far as money is concerned, Lord Rosebery's estimate of £500,000 appears to be considerably under, rather than over, the mark. It is now considered that the carrying through of the whole scheme will need not much short of £1,000,000. It is stated that from various sources between £600,000 and £700,000 of this is already promised or in view.

THERE has been laid before a Co-ordination Committee of the Bradford Education Committee a report resulting from a conference of the teachers of every grade, school superintendents, evening-school teachers, and representatives from the Technical College. The *Yorkshire Post* gives an outline:

There is a concurrence of feeling in favour of co-ordination, which it is recognized was impossible under the School Board owing to its isolated and, to some extent, competitive position. All teachers agree that the children should be put through courses in the preparatory stages to fit them for the next institution to which they are to be passed on. Steps in this direction have already been taken by the Bradford authorities. Thus, the Mechanics' Institute is to become a higher commercial college, and all art schools are to be co-ordinated to lead up to the City Art School to be established at Mannville. The Technical College Committee have purchased a site for a textile department, with full-sized, practical machinery. The infant teachers recommend the limitation of classes to forty "on the rolls," and that children should be retained in the school until seven years of age, instead of six years, as now. The superintendents report in favour of the practice of Froebel principles in infant schools, and recommend that in the ordinary elementary schools half-timers should be taught separately, whilst "Standard VII." children should be sent to separate centres. Scholarships also are proposed to be offered for children leaving the elementary day schools. The reports of the representatives of the "provided" and "non-provided" schools run upon similar lines; so also do those of the certificated assistant teachers. A point to note is that these teachers are in favour of periodical conferences to promote co-ordination and the cause of education generally. The evening-school teachers propose to lead up to the Technical College on the one hand, and to the special commercial classes on the other. The higher-grade schools emphasize the need for the consideration of the subsequent careers of pupils. In each branch scholarships are pleaded for, and the Grammar School claims that it should be regarded particularly as leading up to the universities.

THE National Federation of Assistant Teachers held their Annual Conference at Liverpool (September 24), Mr. E. C. Pritchard, Birmingham, in the chair. Mr. Pritchard said opposition to the last Education Act was not a transient ebullition of feeling, but it would remain as long as the Act permitted schools supported by the State to be under no effective public control, and as long as the appointment of teachers was associated with theological tests. The Associations have increased to 106, and the affiliated members to 13,083. Mr. A. W. Dakers (Newcastle-on-Tyne) was elected Vice-President of the Federation; Mr. G. W. Carr (Bradford), Hon. Treasurer; and Mr. J. T. Boulter (Leicester), Hon. Secretary. The ballot for members of the Committee resulted in the election of Messrs. R. B. Hancock (Nottingham), H. Pearson (Liverpool), D. B. Steer (Derby), R. T. Mawbey (West Ham), W. Harris (Merthyr), and E. Deene (Brighton). Next year's Conference will be held at Hull.

THE Incorporated Association of Assistant Masters in Secondary Schools held their Autumnal General Meeting at Leeds (September 10). The Council (Mr. G. F. Daniell, Mercers' School, London, Chairman, presiding) dealt with the questions of federation, salaries and pensions, and tenure. At the General Meeting, Mr. Daniell urged the importance of registration; regretted the unsatisfactory reply of the Board of Education to joint proposals of the Head and Assistant Masters on the question of tenure; and thought it a mistake to restrict to pupil-teachers scholarships from elementary to secondary schools. Organization, school-leaving certificates, and holidays were discussed. The Chairman said there were 64 examining bodies whose examinations were accepted by various professional bodies and universities in the United Kingdom, and there were 140 in the Empire; so that, if they had any number of boys up to 140, they might have each one of the 140 preparing for a separate examination. Of course, that was absurd. What they wanted was not to add a State examination to the existing examinations, but to get a simpler system which could be easily worked without hampering the freedom of the individual teacher.

THE *Musical Herald* has no doubt that the postponement of registration, so far as music teachers are concerned, is wise.

The idea of training teachers is only just beginning to enter the minds of professors of music. Training classes are scarcely begun; books are wanting. Many excellent teachers of music we have; but each has taught himself. The only part of the musical world where teachers are trained is among the tonic sol-fa-ists. Musicians may be relieved that the subject is shelved; but it will come up again. Now that teachers of other subjects are trained and registered, the demand of head teachers for music teachers who have reached the same level will grow. We do not feel sure that the visiting master in schools will find it worth while to register; but there is no doubt that resident teachers will be anxious to do so. The Board of Education has merely paused for a few years to allow the musical colleges to develop pedagogic work and come in line with other colleges.

THE evening classes held in the various L.C.C. polytechnics, technical institutes, and schools of art have just been reopened. They offer instruction in science, art and technology, artistic handicrafts, &c. The fees are nominal throughout, while in many cases apprentices, learners, and improvers are admitted free. Every facility is offered to different types of students to supplement workshop, office, or studio practice by evening study under the most favourable conditions. Courses are arranged where necessary to prepare professional students for various examinations, art students for the examination of the Board of Education, and artisans for the examinations of the City and Guilds of London Institute, &c. The Council offers annually scholarships and exhibitions to the total value of £1,500 for competition among the students. Detailed particulars can be obtained from the secretary of any particular institute.

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CONSIDERABLE interest is being shown by the University of Liverpool in the proposed scheme for the higher education of working men. Three conferences on this subject have been held in various parts of the country, attended by representatives from trade unions, co-operative societies, University Extension authorities, University lecturers, and students; and great results are expected from a conference to be held in Manchester on October 8. Principal Hopkinson will preside, and Principal Dale, of Liverpool, is expected to attend. The conference is called with the approval and assistance of the Co-operative Educational Committees Association and the University Extension authorities of Liverpool and Manchester, and will be attended by delegates from co-operative societies, trade unions, and trade councils. A full explanation will be made of what working men require from the two Universities, and what they are prepared to do to realize their wants. A resolution will be submitted for the appointment of a joint committee of representatives of the co-operative societies and workpeople for the purpose of thoroughly examining the scheme and reporting to a future conference.

THE Examinations of the Society of Arts commence on Monday, April 10, 1905. Important changes have been made in the examination system. The subjects remain the same, but, in place of two Grades, Elementary and General, there will be three Divisions or Stages:—(1) Elementary, corresponding to the former Grade I.; (2) Intermediate, corresponding to the Third Class and lower part of the Second Class of the former Grade II.; (3) Advanced, corresponding to the First Class with the upper part of the Second Class of the former Grade II. In the Advanced and Intermediate Stages First and Second Class Certificates will be granted in each subject. In the Elementary Stage certificates will be given in each of the subjects enumerated. These will be of one class only. Certificates of proficiency will be granted in each grade to candidates who pass in certain specified subjects during a given period. In Rudiments of Music Higher and Elementary Certificates are given. In Harmony Higher, Intermediate, and Elementary Certificates will be granted. Medals and prizes are offered in each subject in Stages II. and III. Full particulars will be found in the Programme. Examinations are also held in the Practice of Music, and *viva voce* examinations in French, German, Spanish, Portuguese, and Italian. For information as to these examinations reference should be made to the Programme.

THE Army Council, in order to simplify the method of obtaining commissions in the Regular Forces by University candidates, has decided that in temporarily commissioning these gentlemen to the Auxiliary Forces it shall not in future be necessary to appoint them as supernumeraries to any particular unit, but that an "unattached" list may be formed in each command. A candidate may, however, be attached to a particular unit under existing conditions if he desires. Officers on the "unattached" lists will not draw pay or allowances, nor will extra supernumerary officers appointed to a particular unit under any circumstances draw pay, or even allowances, for such unit.

"ANGLO-INDIAN" sends to the *Daily Chronicle* some sharp criticisms of the Indian Universities Act, written from a practical standpoint, and with special reference to certain articles on education in India which appeared in its columns a couple of years ago. He says:

In a recent number of the *Quarterly* this measure is spoken of as an epoch-making reform. As a matter of fact it has been received with general disappointment by Englishmen engaged in the work of education. The evils referred to in your articles have not been removed. The first and greatest of these is that there is not the slightest security that the teacher in an Indian college knows the subject he is teaching. A man may come out as a professor of chemistry, for example, and be required at different times to teach mathematics, physics, history, philosophy, or English literature; or he may be made an inspector of schools. It is a matter of perfect indifference to the Government whether he has previously studied these subjects or not.

The next great defect in the system of Indian education is that the final decision in all questions rests with a man who has not the slightest claim to expert knowledge, the Lieutenant-Governor or Governor of the province. He may not even have studied at a university himself. In any case, his whole official life before he became Lieutenant-Governor has been occupied with the details of administration. As Collector or Commissioner he had nothing to do with education. It is as if in England the permanent Under-Secretary of the Home Office controlled all education from the universities to the Board schools. This evil, instead of being removed, is intensified by the Act.

The opinion here expressed about the Indian Universities Act is not peculiar to myself. I have lived many years in India, and have a wide circle of acquaintance among teachers in Indian colleges, both Government and aided. I can say with confidence that the dissatisfaction is general, and is certainly not, as the *Quarterly Reviewer* tries to make out, confined to Babus.

It is true that those who know India well are not too sanguine when any reform is announced. Still it is a little irritating that such a very paltry measure, dealing only with external trivialities and not removing any fundamental defects, should be represented to the English public as a great achievement.

THE Clarendon Press has issued a "Programme of Special Studies for the Academical Year 1903-4, together with some Account of Opportunities for Special Work or Research existing in the University." For post-graduate students the University has so far made no direct provision; but individual college tutors and professors have given advanced lectures or instruction to chance pupils. The "Programme" is a first step towards systematization of such sporadic efforts. It is not official; it has been compiled by various teachers interested in post-graduate work, and the Press publishes it rather as a matter of convenience. But it gives a good and accurate *conspectus* of the lectures, instruction, and other aids—libraries, laboratories, &c.—open to advanced students, and should prove very useful. It also shows how much is already done at Oxford, casually and unsystematically, to assist students in "special work or research."

THE Bury Grammar School Trustees, who recently, on the receipt of a grant of £18,000 from the Hulme Trust, built a new school for boys, have now £10,000 in hand or promised for a new school for girls, and have resolved to proceed at once with the erection. The total cost of the whole block of buildings, with land for playing fields and a central hall, is estimated at between £40,000 and £50,000.

A BOOK just published by order of the Prussian Ministry of Education gives some interesting particulars regarding the cost of working of German universities. The total expenditure by the Government on these seats of learning for the year 1903 is stated at 29,456,298 marks. The eleven Prussian universities took, roughly, one-half. Three Bavarian universities had 3,600,000; two Baden universities, 2,400,000; and the six remaining universities scattered through other States, 9,000,000 marks. One university (Berlin) has nearly 7,000 students. The smallest and poorest is Erlangen, in Bavaria.

LORD MONKSWELL'S second son, the Hon. Gerard Collier, is at present acting as teacher in an elementary school under the West Ham Education Committee. Mr. Collier, who took his Oxford degree last year, is an educational enthusiast, and is desirous of obtaining a thorough knowledge of his subject from a teacher's standpoint. It is his intention to take each standard for about a month, and to watch the other masters and their methods of teaching.

MR. JOHN MACLEOD, H.M.I.S., I.S.O., retires from the inspectorate on November 1 after a distinguished service of over thirty-one years. After graduating at Glasgow he was recommended by Lord Kelvin for the Professorship of Mathematics in King's College, Nova Scotia, which he held for a short period. Returning to be assistant to Prof. Blackburn in his old University, he incidentally delivered a course of lectures to ship captains on the deviation of the compass in iron ships, having been specially recommended by the Senatus on the application of the Institution of Civil Engineers and Shipbuilders. This course led to his unexpected recommendation by Prof. Sylvester for the post of Mathematical Instructor at the Royal Military Academy. He was appointed an Inspector of Schools in 1873. On the occasion of his semi-jubilee in Morayshire, in May, 1902, the teachers of his district with the utmost cordiality presented him with a magnificent illuminated address, eulogizing his ability and impartiality. Soon afterwards, as we announced at the time, he had the decoration of the Imperial Service Order conferred upon him. Mr. Macleod has for many years been an active and esteemed contributor to our mathematical columns. All good wishes to him in his retirement!

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THE death of Mr. Traugott Heinrich Weisse, who was engaged

in educational work in Edinburgh for nearly half a century, is announced. Mr. Weisse, who was blind from birth, was educated at Berlin University, and, leaving Germany on account of political troubles, went to Edinburgh in 1848. Robert Louis Stevenson was one of his pupils. Mr. Weisse was the author of a German grammar and some similar works, which are well known in schools.

It is with painful regret that we record the untimely death of Mr. Ronald Hudson, Lecturer in Mathematics in Liverpool University, by a mountaineering accident in North Wales (September 21). Mr. Hudson was Senior Wrangler six years ago, and was already doing important original work in the higher mathematics. Deep sympathy will be felt for his family, and especially for his father, Prof. Hudson, of King's College, London, who has for many years been an esteemed contributor to our mathematical columns. Mr. Hudson was only twenty-seven years of age.

We also announce with much regret the death of Mrs. Biddle, after a prolonged illness. Mr. Biddle may be assured of the genuine sympathy of our readers, to whom he is well known as the former conductor of our mathematical columns, and an active and valuable contributor.

As we go to press comes news of the lamented death of Dr. Thomas A. Stewart, M.A., LL.D. (Aberd.), Senior Inspector of Schools in Scotland, at the premature age of fifty-eight. Dr. Stewart was extremely popular; he understood teachers and pupils as well as education, and had plenty of good sense and humour.

UNIVERSITIES AND COLLEGES.

Sheffield. The Council has passed the following resolution:—

That this Council, fully realizing the personal loss which it has sustained in the death of its Chairman, Sir Henry Stephenson, desires to place on record its sense of the great services which he has rendered to the Sheffield University College. The memory of his untiring interest in this institution will be a constant incentive to the Council to carry out the work he had so much at heart.

Birmingham. The buildings of the Metallurgical Department have been opened. They form only a small portion of the scheme of building at present being undertaken at Bournbrook, which will not be completed for two or three years; but the cramped state of the present University buildings in Edmund Street necessitated the pushing forward of the Metallurgical Department, which, in a large iron centre like Birmingham, is one of the most important connected with the University. All the plant and machinery are of full working size. For instance, there is a two-ton Siemens furnace, with all the latest equipment necessary for a commercial undertaking, and capable, if necessary, of a large weekly output of steel. It is not, however, intended to produce steel for sale; the object is rather to familiarize the students with the various causes, chemical and other, which affect the quality of steel. Another portion of the Department will be devoted to metals other than iron and steel.

Edinburgh. A scheme has been provisionally projected between the Town Council and the University Court by which a new Administrative Board is to be constituted for the Royal (Dick) Veterinary College, and a degree in veterinary science is to be conferred by the University.

VOICE PRODUCTION.

THEORY AND PRACTICE.

From an able and comprehensive paper on "The Relation of Breathing to Voice Production," read at the recent Congress of the Royal Institute of Public Health at Folkestone by Signorina Bambacioni, we take the following passage:—

What is the relation of scientific theory to practice in voice production? A scientific basis is as necessary in singing as it is necessary for breathing exercises. The singing master is not a demonstrator in a laboratory, but no master should be trusted who tells you that men inflate the lungs in one way and women in another, or that men possess a "vocal register" which women have not, or that the different descriptions of voice make use of different registers. The wonder is how any one with the physiological data before him—with the physiological diagrams in front of him illustrating the truth that "all vocal sound is produced in the same way, and generated in the same place," can continue to repeat such mistakes: mistakes from which the first great masters were free—by some artistic intuition—before the discovery of the laryngoscope. There is only one really important thing to be borne in mind for the teaching of singing: It cannot be taught by written methods, or academically. Beyond all other arts it needs the master, because it needs the trained ear for every step of the study. Present-day failure in voice training is due to the practical failure to detect in oneself or others the working of our scientific or artistic theory—to an oblivion of its meaning when it is translated into terms of vocal art. The master teaches one thing, and listens for another. The physiologist indeed knows the principle on which the voice should be produced, but he does not recognize from the quality of the sounds whether have they been produced that way or no. This should be the business of the voice trainer, and it is his first business. It should not be difficult to realize that the key to the voice-production problem is the possession of an ear for pure vocal sound. Unlike the piano or other ready-formed instruments, the vocal instrument must be formed, and it can only be formed by ear. But let us suppose that no first-rate violin had been heard for two or three generations: the timbre of tone required would no longer be generally recognized. The standard of tone would have been lost. That is very much our present position as regards voice training.

There have been many recent attempts to better this condition of things. After the appearance of two articles on the art of singing in the *Nineteenth Century* in May and August of last year, written by a friend and pupil of mine, Canon Lyttelton, the Head Master of Haileybury, applied what had been said there to the problem of the education of the speaking voice. At Oxford, also, I believe, they are proposing to get at the root of the presen mystery which manages to combine so much fine theory with what all recognize to be such deplorable practical results; and a society has only just been formed for the improvement of the teaching of music and singing in secondary schools. I hope I shall carry you with me when I say that there can only be disappointment in store for all attempts to improve our speaking and singing methods unless we begin by realizing: (1) That all proper management of the voice requires proper management of the breathing apparatus, which is not a new art, but that very old one of which the throat specialist Morell Mackenzie wrote: "With the ancient Italian method we acquire a complete dominion over the principle of each respiration, and so avoid a useless expenditure of air, a 'waste of breath.' In other words, with the Italian system the greatest effect is obtained with the least expenditure of force." (2) That all discussion must be sterile of results until we not only use the singing vocabulary in the same, and a settled, sense, but until we possess real knowledge of the practical operation of phrases we use so glibly. (3) That the *sine qua non*, the first and essential requisite, for a school of voice production is the possession by masters of a trained ear for vocal sounds. We should be forgetting very recent history if we found it difficult to account for the present general deterioration in voice theory and voice production. The formation of the vocal instrument—an instrument which gave us none but uniform and pure vocal sounds—was the only study which the old masters understood by voice training; but Wagner, though he admired the results, declared that for the future this training must be abandoned, the reason he gave being that "German throats" were not susceptible of it. In the confusion which followed, in the wreck of sound physiological principles, and the ruin of ear which no longer detected pure vocal sounds, we have an ample and adequate cause for the anarchy and uncertainty which now exist.

THE TEACHERS' REGISTER.

SUPPLEMENTAL REGISTERS.

In September, 1902, the Board of Education referred to the Consultative Committee the question of drafting Regulations for the establishment of Supplemental Registers for teachers of special subjects. The Committee have given very prolonged and earnest consideration to this matter, and, after a conference with the Teachers' Registration Council, a Joint Sub-Committee, including representatives in equal numbers of these two bodies, was appointed to consider proposals for Draft Regulations for these Supplemental Registers. The Report of this Sub-Committee was recently received and considered, and, as a result, the Consultative Committee, at their last meeting before the recess, resolved to recommend to the Board of Education that the establishment of Supplemental Registers be postponed until the teaching of the subjects proposed for the Supplemental Registers has been further organized in connexion with general education. The Board of Education have accepted this recommendation, and, for the present, no further steps will be taken to establish such Supplemental Registers.

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COLLEGE OF PRECEPTORS.

CERTIFICATE EXAMINATION,

JULY, 1904.

The following is the list of the successful candidates at the Chefoo, Johannesburg, and Lagos Centres.

N.B.—The small italic letters denote that the Candidate to whose name they are attached was distinguished in the following subjects respectively :—

a. = Arithmetic. *g.* = Geography.
al. = Algebra. *ge.* = German.
d. = Drawing. *h.* = History.
e. = English. *s.* = Scripture.
f. = French.

The small figure ² prefixed to names in the Third Class List denotes that the Candidates were entered for the Second Class.

Bracketing of names denotes equality.

BOYS.

SECOND CLASS [OR JUNIOR].—HONOURS DIVISION.

Parry, R. C. *s.*	China Inland Mission S., Chefoo
Harris, A.	Private tuition
Hendriks, N. *f.ge.*	Private tuition

SECOND CLASS [OR JUNIOR]—PASS DIVISION.

Robinson, G. A.	China Inland Mission S., Chefoo
Burnett, B. C. G. *s.*	China Inland Mission S., Chefoo
Holt, H. *f.ge.d.*	Private tuition
Ford, R. T. *a.f.*	Private tuition
Drummond, J. McC. *d.*	Private tuition
Burnett, B. B.	China Inland Mission S., Chefoo
Alexander, E. *ge.*	Private tuition
Couzyn, M. *a.f.ge.*	Private tuition
Lapin, I.	Private tuition
Grant, J. B.	China Inland Mission S., Chefoo
Schumann, J. W. E.	Private tuition
Robinson, H.	China Inland Mission S., Chefoo
Sims, B. *al.*	Private tuition
Abelheim, S. *ge.*	Private tuition
Nathan, E.	Private tuition
Goldberg, A.	Private tuition
Corbett, R. J.	China Inland Mission S., Chefoo
Harvey, E. A.	Private tuition
Alexander, J.	Private tuition
George, F. R.	Private tuition
Ludorf, J. F.	Private tuition
Cohen, S. B.	Private tuition
Bernberg, H. D. *ge.*	Private tuition
Lance, G. L.	Private tuition
Van Tonder, G. F. L.	Private tuition

THIRD CLASS—HONOURS DIVISION.

Taylor, W. R. O. *s.e.g.a.*	China Inland Mission S., Chefoo
Goforth, P. *e.g.a.al.*	China Inland Mission S., Chefoo
Chalfant, E. N. *e.g.a.al.*	China Inland Mission S., Chefoo
Clarke, A. R. F. *e.a.al.*	China Inland Mission S., Chefoo
Curtis, A. P. *e.a.*	China Inland Mission S., Chefoo
Coulthard, W. H. *a.*	China Inland Mission S., Chefoo
Parry, F. E. *g.*	China Inland Mission S., Chefoo
Miller, G. M. *a.*	China Inland Mission S., Chefoo

THIRD CLASS—PASS DIVISION.

²Martins, T. A.	C. M. S. Gram. School, Lagos
²Rosettenstein, J. W.	Private tuition
²Durham, L.	Private tuition
²Hansen, J. M.	Private tuition
²Strange, D. T. F.	Private tuition
Agbebi, F. A.	C. M. S. Gram. School, Lagos
²Freundlich, S.	Private tuition
Bajulai, J. F.	C. M. S. Gram. School, Lagos
Hill, C. H. *s.*	China Inland Mission S., Chefoo
Brown, G. F.	China Inland Mission S., Chefoo
Yates, K. H. *a.*	China Inland Mission S., Chefoo
Ribeiro, F.	C. M. S. Gram. School, Lagos
²Krummeck, P. J.	Private tuition
Lahanmi, V. R.	C. M. S. Gram. School, Lagos
²Scott, R. W.	China Inland Mission S., Chefoo
²Googboade, E. A.	C. M. S. Gram. School, Lagos
Lawson, W. T. G.	C. M. S. Gram. School, Lagos
²Samuel, J. B.	C. M. S. Gram. School, Lagos
²Hutchinson, C. W. O.	Private tuition
Copp, A. E.	China Inland Mission S., Chefoo
²Figur, D.	Private tuition
Hearn, R. A. *a.*	China Inland Mission S., Chefoo
Butland, W. H.	China Inland Mission S., Chefoo
Gansallo, A. M.	C. M. S. Gram. School, Lagos
²Adeneye, M. L.	C. M. S. Gram. School, Lagos
²DuPlessis, G. J.	Private tuition
²Cattrill, H. F. F.	Private tuition
Tomkinson, L.	China Inland Mission S., Chefoo
²Andrew, H. M.	Private tuition
²Hendry, A. J. K.	Private tuition
²Otolorin, E. A.	C. M. S. Gram. School, Lagos
d'Almeida, J.	C. M. S. Gram. School, Lagos
²Schikkerling, R. W.	Private tuition
²Lewison, S.	Private tuition

GIRLS.

SECOND CLASS [OR JUNIOR]—HONOURS DIVISION.

Burnett, G. M. *s.h.*	China Inland Mission S., Chefoo

SECOND CLASS [OR JUNIOR]—PASS DIVISION.

Thompson, R. L. *s.*	China Inland Mission S., Chefoo
Reid, M. McL.	China Inland Mission S., Chefoo

THIRD CLASS—HONOURS DIVISION.

Coulthard, E. M. *e.g.a.f.*	China Inland Mission S., Chefoo
Clarke, A. L. *s.e.g.*	China Inland Mission S., Chefoo

THIRD CLASS—PASS DIVISION.

²Copp, E. E.	China Inland Mission S., Chefoo
Burnett, G. H.	China Inland Mission S., Chefoo
Orr Ewing, A. H.	China Inland Mission S., Chefoo
Easton, C. E.	China Inland Mission S., Chefoo
Hunnex, L. M.	China Inland Mission S., Chefoo
Stevens, M. M. *f.*	China Inland Mission S., Chefoo

PROFESSIONAL PRELIMINARY EXAMINATION—CLASS LIST.

SEPTEMBER, 1904.

THE Supplementary Examination by the College of Preceptors for Certificates was held on the 6th, 7th, and 8th of September, in London, and at seven other local centres, viz., Alnwick, Birmingham, Bristol, Jersey, Leeds, Liverpool, and Manchester. The following candidates obtained Certificates :—

FIRST CLASS [OR SENIOR].

Pass Division.

Capon, H. V.	Mann, H. M. *h.*
Chambers, G. O.	Neely, C. W. *e.f.*
Cheshire, J. W.	Thoresby-Jones, J. E.

SECOND CLASS [OR JUNIOR].

Honours Division.

Benjafield, J. D. *a.al.ma.*	Hodgson, W. A. *gm.*
Brotchie, R. T. *f.ch.*	Hull, H. R. B. *a.f.*
Campain, J. H.	Kemball, C. H. *a.gm.*
Christitch, Miss A. *f.*	Palmer, R. J. *a.al.f.ch.*
Dawson, G. de H.	Rippon, T. S. *f.*
Douty, R. C. J. *al.gm.f.l.*	Stobie, H. *ma.ch.*
Edmond-Stowell, T.	Stogdon, Miss M. B. *f.ge.*
Evans, H. A. *h.a.al.gm.*	Mom Chow Thavara. *ch.*
Gilbert, N. H.	

Pass Division.

Bampton, J. H.	Campbell, G. W.	Fripp, J. T.
Bates, H. J.	Cartwright, R. *ch.*	Grant, H. D.
Blackman, H. G. B.	Clarke, J. F. H. *f.*	Green, A.
Blows, C. E.	Cobb, I. G.	Griffiths, G. H. C. St. G. *al.*
Botwright, H. R. V.	Comissiong, W. C.	Griffiths, J.
Bowen, T. R. *h.*	Dabbs, A. J.	Harrison, L. E. C.
Bowes, T. D.	Daintith, T. J.	Henning, H.
Breen-Turner, E. V.	Dence, Miss M. C.	Hill, E.
Brown, B. J.	Depree, S. B. *f.*	Hodgkinson, P.
Brown, J. P. *gm.m.*	Drayton, P. W. P.	Hough, G. H.
Browne, H. M.	Dummere, H. H.	Hughes, D. E. J. S.
Burch, H. J.	Edgar, N.	Hughes, G. T. D.
Burton, T. A.	Essex, R. A.	Ingram, W. L. *h.*
Butler, Miss B.	Fletcher, A. A.	Keating, Miss B.
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N.B.—The small italic letters denote that the candidate to whose name they are attached was distinguished in the following subjects respectively :—

a = Arithmetic. *gr* = Greek.
al = Algebra. *h* = English History.
ch = Chemistry. *l* = Latin.
e = English Language. *m* = Mechanics.
f = French. *ma* = Magnetism and Electricity.
ge = German.
gm = Geometry.

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on September 17. Present: Dr. Wormell, Vice-President, in the Chair; Mr. Barlet, Rev. J. B. Blomfield, Dr. Breul, Mr. E. A. Butler, Mr. J. L. Butler, Mr. Charles, Miss Dawes, Mr. Eve, Mr. Hawe, Rev. Dr. Hiron, Mr. Holland, Miss Jebb, Mr. Millar Inglis, Rev. J. E. Mackie, Mr. Pinches, Rev. Dr. Scott, Mr. Starbuck, Rev. J. Stewart, Mr. Storr, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported a considerable increase in the number of entries for the Diploma Examination, which was held on August 30 to September 3, as well as for the Professional Preliminary Examination, which was held on September 6–9, as compared with the entries for the corresponding examinations in 1903.

The Diploma of Licentiate was granted to Mr. E. E. Kitchener, who had passed the required examination.

The Report of the Finance Committee was adopted.

The Report of the Examination Committee was adopted, and the following were appointed to Examinerships:—Mr. H. E. Dawson, M.A., and Mr. C. E. Williams, M.A., for Mathematics; Mr. F. A. Gardner, M.A., for Physics; Mr. H. Spencer Harrison, D.Sc., for Physiology and Zoology; and Mr. W. S. Boulton, B.Sc., for Geology.

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Dr. J. J. Findlay, Professor of Education at the Victoria University, Manchester, and Mr. E J. Morgan, Castle Hill School, Ealing, were elected members of the Council.

A Special Committee was appointed to inquire into the position of private schools under the working of the Education Act of 1902.

The following persons were elected members of the College:—

Miss F. C. Hall, A.C.P., Langford Girls' School, Cotham, Bristol.
Miss A. Jackson, Convent of the Assumption, Richmond, Yorks.
Mr. J. D. McClure, M.A., LL.D. Camb., Mill Hill School, N.W.
Miss A. M. Rolfe, A.C.P., The Girls' Collegiate School, Leicester.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHORS.—Farmar's Place-Names Synonyms Classified; Thornton's Manual of Book-keeping.

By EDWARD ARNOLD.—Lachlan and Fletcher's Elements of Trigonometry; Starling and Clarke's Preliminary Practical Mathematics.

By G. BELL & SONS.—Baker and Bourne's Elementary Algebra, Part I.; Borchardt and Perrott's New Trigonometry for Schools, Part I.; Ready's Précis and Précis-Writing; Pendlebury's New School Arithmetic and New School Examples in Arithmetic.

By A. & C. BLACK.—Clarke's Houssaye's La Bataille de Waterloo; David's Beginner's Trigonometry; Kirkman's About's La Délivrance de Schultz, Frazer's Petites Comédies, and Selections from Gautier; Lyde's Elementary Geography of America, Elementary Geography of Asia, and Elementary Geography of the British Isles; Reynolds's British Isles (Regional Geography); Taylor's Synthetical Map of Canada; Smith's Labiche and Jolly's Le Baron de Fourchevif.

By the CLARENDON PRESS.—Boole's Preparation of the Child for Science; Mansion's De Tocqueville's Quinze Jours au Désert; Ramsay's Exercises in Latin Prose (two Parts); A. H. Smith's Gozlan's Le Château de Vaux; M. Smith's Lamartine's Deux Héroïnes de La Révolution Française.

By C. J. CLAY & SONS.—Cambridge Higher Local Examination Papers, June, 1904.

By W. B. CLIVE.—Matriculation Directory, No. XXXVII., June, 1904.

By HACHETTE & Co.—Barrère's Le Sage's Gil Blas chez les Brigands; Heslop's Heyse's Das Waldlachen; Weiss's Hauff's Der junge Engländer; Rope's Jules Verne's Le Tour du Monde en Quatre-Vingts Jours.

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By METHUEN & Co.—George's Historical Geography of the British Empire Wilmot-Buxton's Ancient World.

By NELSON & SONS.—Nelson's Royal South African Geography Text-Books (Introductory and Books I. and II.).

By RIVINGTONS.—Calvert's First Book of French Oral Teaching; Hartog's Deux Contes d'Andersen; Longland's Junior French Unseens, Book I., and Senior French Unseens, Book I.; Wade's Third Year French Writer.

Calendars of Aberdeen University and University College, Bristol.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

THE REGISTRATION OF DISMISSED HEAD MASTERS IN SECONDARY ENDOWED SCHOOLS.

To the Editor of "The Educational Times."

SIR,—Can you or any reader of *The Educational Times* furnish me with any valid objection to the registration in a separate column of head masters, referred to in paragraph 133 of Part III. of the Secondary Education Commission Report, namely, those who have been dismissed from their posts when they are in the right and their governing bodies in the wrong?—I am, Sir, &c.,

THOMAS ALLEN.

Southwick Lodge, Lower Wick, Worcester.
September 12, 1904.

[There is ambiguity in "the right" and "the wrong," and there is only one sort of "right" and "wrong" that can be considered in the present connexion. Accordingly, it is difficult to see how there can be any one to register in the suggested column. —ED. *E.T.*]

A CORRECTION.—In our notice of Mr. Gavin Hamilton's "Steps to Latin" last month the following sentence ought to be deleted:—"We should have thought that Classes Two to Five might be taught the elements of Latin without being involved in the strife of ancient authors and modern theories." For "the 'controversy,'" as Mr. Hamilton justly remonstrates, "is only on the title-page: all else is restricted to teaching the Latin of Cicero and Cæsar." We regret, with our reviewer, that he omitted to point out this when he passed on to the body of the work.—ED. *E.T.*

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CURRENT EVENTS.

Fixtures.

AT the Monthly Meeting of the College of Preceptors, on October 19, at 7.30 p.m., the Rev. J. O. Bevan, M.A., F.C.P., will read a paper on "How to evoke a Taste for Reading and Continued Study after the Pupil leaves School."

* * *

THE usual monthly Lecture of the Société Nationale des Professeurs de Français en Angleterre will be delivered at the College of Preceptors on October 29 at 4 p.m.

* * *

AT King's College, London, Prof. Caldecott will lecture on General Psychology during first and second terms of coming Session; Prof. Halliburton, on Histological Psychology, during first term (from October 13); and Dr. C. S. Myers, on Experimental Psychology (with demonstrations and laboratory work), during second and third terms.

* * *

THE annual meeting of the Association of Education Committees will be held on October 6 and 7 at the Holborn Restaurant, London.

* * *

A JOINT CONFERENCE of representatives of County Councils in Wales and M.P.'s for Welsh constituencies will consider on October 6 the bearing of the Education (Local Authorities' Default) Act, 1904, upon the administration of the Education Act, 1902.

* * *

A UNIVERSITY Conference is to be held at Manchester on October 8 to consider a proposed scheme for the higher education of working men.

* * *

THE Society of Arts Examinations for next year will commence on April 10. (See "Summary.")

* * *

THE Birkbeck College, Breams Buildings, Chancery Lane, commences its 82nd session on October 3, when Dr. J. E. Mackenzie will give the opening address at 7.30 p.m.

* * *

THE tenth session of the London County Council School of Photo-engraving and Lithography has just commenced (September 26). Open only to such as are "genuinely engaged in business in any branch of the photo-mechanical, photographic, designing, illustrative, lithographic, engraving, and printing crafts."

* * *

FORMS of entry for the Cambridge Local Examinations (December 12) can now be obtained from the Local Secretaries. The forms for the Senior, Junior, and Preliminary Local Examinations are to be returned to the Local Secretaries by October 3; those for the Higher Local Examination by October 31. The regulations may be obtained from the Local Secretaries or from Dr. Keynes, Syndicate Buildings, Cambridge.

Honours.

THE Archbishop of Canterbury has received the honorary degree of LL.D. from Toronto University.

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THE University of Leeds proposes to confer a long list of degrees on October 6:—

LL.D.: Lady Frederick Cavendish, the Archbishop of York, the Duke of Devonshire, Lord Spencer (Chancellor of the Victoria University of Manchester), Lord Harewood (Lord Lieutenant of the West Riding), Lord Cross (member of the Court of the Clothworkers' Company), Lord Herries (Lord Lieutenant of the East Riding), Lord Masham, Lord Allerton, Mr. A. H. D. Acland, Sir Francis Powell, M.P., Sir John Barran (Treasurer of the University of Leeds), Sir Charles Hubert H. Parry (Professor of Music in the University of Oxford and Director of the Royal College of Music), Sir Alexander C. Mackenzie (Principal of the Royal Academy of Music), Sir Charles Villiers Stanford (Professor of Music in the University of Cambridge), Sir Edward Elgar. Mr. William Bousfield (Master of the Clothworkers' Company), Mr. Charles Milnes Gaskell (Chairman of the West Riding County Council), Dr. Charles Wood, and Dr. Henry Walford Davies.

Litt.D.: Sir Albert K. Rollit, M.P., Mr. Alfred Austin, the Rev. Andrew M. Fairbairn (Principal of Mansfield College, Oxford), and Dr. Joseph Wright (Professor of Comparative Philology in the University of Oxford).

D.Sc.: Lord Rosse (Chancellor of the University of Dublin), Lord Kelvin, Sir Isaac Lowthian Bell, Sir James Kitson, M.P., Sir William Henry Broadbent, Sir Arthur W. Rücker (Principal of London University), Dr. Thorpe, C.B. (Director of the Government Laboratories), Mr. Claudius G. Wheelhouse, LL.D. (late member of the Council of the Royal College of Surgeons and President of the Council of the British Medical Association), Mr. Jonathan Hutchinson, Mr. J. Pridgin Teal, Dr. Hughlings Jackson, Prof. Miall, Dr. Tempest Anderson, and Prof. A. W. Mayo Robson.

Endowments and Benefactions.

THE late Mr. John Innes, lord of the manor of Merton, is said to have left £300,000 for the establishment and maintenance of a museum at Merton.

* * *

BEDFORD COLLEGE, LONDON, is asking for £100,000 for a building fund, besides endowments, general or special.

* * *

THE Burns Federation has set aside £100 as nucleus of a fund for the foundation of a Chair of Scottish Literature in one of the Scottish Universities.

* * *

LORD STRATHCONA has given 50,000 dols. to the Medical Faculty of McGill University, in supplement of his gift of 100,000 dols. two or three years ago, to complete buildings and to assist in the general work of the Medical School.

* * *

M. LÉON CLÉRY, a distinguished French *avocat*, has left £4,000 to the Animals Protection Society, the yearly interest (say £120) "to be awarded annually to the schoolmaster or schoolmistress who shall have done most to cultivate among his or her pupils the spirit of compassion for their dumb fellow-creatures." How to decide among 60,000 competitors?

Scholarships and Prizes.

AT the Aberdeen and North of Scotland College of Agriculture 14 bursaries of £15 each, and 9 of £10, are offered to students resident in the north-eastern counties of Scotland.

* * *

DR. GEORGE OGILVIE has given £50 for an annual prize or medal at Fordyce Academy, as a memorial of two brothers and himself, old pupils.

* * *

EVERY son of a clergyman or teacher in active service is given upon application a half tuition scholarship in the College of Arts and Science of the New York University.

Appointments and Vacancies.

IT is understood that the Provost of Oriel (Dr. D. B. Monro) will retire from the Vice-Chancellorship of Oxford University at the commencement of Michaelmas Term, and will be succeeded by the Rector of Lincoln (Dr. Merry).

* * *

DR. EDWIN ANDERSON ALDERMAN, D.C.L., LL.D., President of Tulane University, has been appointed first President of the University of Virginia, which has for the past three quarters of a century been content with a Chairman of the Faculty.

* * *

MR. POUNTNEY BIGELOW is to be the first occupant of the new Chair of Colonial Administration at Harvard.

* * *

THE Very Rev. T. J. Murphy, President of Blackrock College, Dublin, has been appointed President of Prior Park College, Bath.

* * *

MR. W. I. LAST, A.M.I.C.E., Senior Keeper in the Science Division of the Victoria and Albert Museum, has been appointed Director of that division of the Museum, in the place of Major-General Festing, C.B., F.R.S., retired.

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PROF. W. MACNEILE DIXON, Litt.D., Professor of English Literature in Birmingham University, succeeds Prof. Raleigh in the Chair of English Literature in Glasgow.

* * *

MR. F. J. RAHTZ, M.A., B.Sc., has been appointed Assistant Lecturer in English and Latin at the Merchant Venturers' Technical College, Bristol.

* * *

DR. H. BURROWS has been appointed Lecturer and Demonstrator in Chemistry at the Sir John Cass Technical Institute, Aldgate.

* * *

MR. A. LANDER, B.Sc., Assistant Lecturer and Demonstrator in Chemistry, University College, Bangor, has been appointed Lecturer in Agricultural Chemistry at the Edinburgh and East of Scotland College of Agriculture.

* * *

MR. F. C. REES, B.Sc., Assistant Lecturer and Demonstrator in Physics, University College, Bangor, has been appointed Inspector of Secondary and Technical Schools under the Glamorganshire County Council.

* * *

MR. ALFRED MORGAN, Head Master of the Pontypridd Pupil-Teacher Centre, has been appointed Director of Education to the Mountain Ash Education Committee.

* * *

MISS M. ATKINSON, M.A. Glas., has been appointed Assistant Lecturer in Classics and Philosophy at the Durham College of Science, Newcastle-on-Tyne.

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MR. DAVID ELLIS, B.Sc. Lond., Ph.D. Marb., science master at Dollar Institution, has been appointed Lecturer in Botany and in Bacteriology at the Glasgow and West of Scotland Technical College.

* * *

MR. F. C. WILLCOCKS, Demonstrator in Entomology and Botany and Diplomé of the South-Eastern Agricultural College, Wye, has been appointed Entomologist to the Khedivial Agricultural Society at Cairo.

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MR. A. J. PERMAN, M.A. Lond., senior assistant master (since 1896), has been appointed Head Master, of Merthyr Tydvil County School.

* * *

MR. FREDERICK BETTERIDGE, LL.B., Head Master of the Hanson Higher-Grade School, Bradford, has been appointed Head Master of the Westoe Road Secondary School, South Shields.

* * *

THE REV. A. J. SKINNER, B.A. Lond., science and mathematical master at Reading School, has been appointed Head Master of Sir William Borlase's School, Marlow.

* * *

MR. F. P. WILDE, B.A., Mathematical Master, Ilminster

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Grammar School, has been appointed an Assistant Master in Watford Grammar School.

Mr. F. E. Relton, late Scholar of Worcester College, Oxford, succeeds Mr. Wilde at Ilminster.

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Mr. C. E. Brittain, M.Sc. Vict., assistant master at Normanton Grammar School, has been appointed Head Master.

* * *

Mr. James P. Scott, M.A., B.Sc., has been appointed Science Master in Dollar Institution.

* * *

Mr. Alan Inglis, art master, Central Technical School, Clonmel, has been appointed art master in the High School, Arbroath.

* * *

Mr. Frank Sangster, assistant in the Art Department of Brechin High School, succeeds Mr. Richardson as Head.

* * *

Captain Alan Foster, late of the Argyll and Sutherland Highlanders, has been appointed by the Scotch Education Department Inspector of Physical Instruction in connexion with the inspection of higher schools and departments in Scotland. He will also inspect the classes in this subject in the training colleges, as well as those for the further instruction of teachers, conducted under Article 91 (d) of the Code.

* * *

Mr. George Macdonald, M.A., Assistant Director of Higher Inspection, Scotland, has been appointed to act as Assistant-Secretary to the Scottish Education Department in Edinburgh.

Literary Items.

Mr. Bryce is preparing yet another edition of his "Holy Roman Empire"—revised throughout and enlarged.

* * *

Messrs. T. & T. Clark announce a new series—"The Library of Ancient Inscriptions." The first volume will deal with "Babylonian and Assyrian Laws, Contracts, and Letters." The author is the Rev. C. H. W. Johns, M.A., whose translation of the Code of Hammurabi we recently noticed.

* * *

In Mr. Henry Frowde's long list of works to be issued from the Clarendon Press before Christmas we note Dr. Gifford's edition of the "Euthydemus"; Jowett's translation of Aristotle's "Politics"; second volumes of Euripides and Plautus (Oxford Classical Texts); Origines Islandicæ ("Landnámabóc" and the earliest prose Sagas of the Old Northern Tongue), in two volumes; a Facsimile Reproduction of the First Folio of Chaucer, 1532, edited, with introduction, by Prof. Skeat; an English verse rendering of the tragedies of Seneca, by Ella I. Harris, Ph.D. (Yale); and two important books on India.

* * *

The Clarendon Press proposes to publish a selection of the shorter and dispersed writings of the late Prof. York Powell, including, besides some papers of a more professional stamp, literary studies and criticisms, and probably a few verses and translations, with a prefatory memoir based as far as possible upon his letters. Prof. Oliver Elton, of the University of Liverpool, will edit the work and write the memoir. Those that can furnish letters, recollections, or other material, are asked to communicate with Prof. Elton, 15 Parkfield Road, Liverpool, or with Prof. J. A. Stewart, Christ Church, Oxford.

* * *

Dickens's Christmas Books in five tiny volumes, printed on Oxford India paper, are about to be published by Mr. Henry Frowde. The original illustrations by Leech, Maclise, Doyle, Stanfield, Landseer, Tenniel, and Stone are reproduced.

* * *

Messrs. A. & C. Black have just issued the third instalment of Sir Walter Besant's "London in the time of the Tudors," illustrated from contemporary prints, and containing a reproduction of Agas's Map of London in 1560.

* * *

Besides educational text-books, books for boys and girls, annuals, and so forth, Messrs. A. & C. Black announce a remarkable series of descriptive volumes with numerous full-page illustrations in colour.

* * *

Messrs. T. C. & E. C. Jack announce "a complete series of school books for the primary schools, to be followed by books suitable for advanced teaching." Fresh ideas supplement the formal requirements of the Educational Authorities, and "every detail of production has been carefully studied"—especially paper and type and style of illustration. The first samples to hand fully bear out the high claims of the publishers.

* * *

Messrs. Archibald Constable & Co. have in active preparation for immediate publication a work entitled "Science and Immortality," by Prof. Osler, of Oxford.

* * *

In the *World's Work* for September Kathleen Schlesinger charmingly instructs girls "How to study in Dresden."

* * *

Great Thoughts for September 10 gives an instructive interview by Mr. Raymond Blathwayt with Mr. Alexander Devine on his "educational experiment" at Clayesmore (with portrait). Mr. Devine "is endeavouring, as far as possible, to bring the public-school system into harmony with the whole train of thought which is so pre-eminently characteristic of the new era."

* * *

The *Record* (July–September) reviews the present aspect of Agricultural Education, and sets forth preliminary proposals for the training of teachers in the great Northern counties and certain scholarship schemes of Local Education Authorities, with various other matters and numerous illustrations.

* * *

In the *North American Review* for September, Prof. Barrett Wendell defines "the practical aim of a general education" to be "such training as shall enable a man to devote his faculties intently to matters which of themselves do not interest him."

Of all educational superstitions, we may freely admit, none is more instantly apparent than that which worships the classics and mathematics as idols. And yet the newer educational superstition which bows the knee to pedagogics is beginning to seem more mischievously idolatrous still.

This from Harvard!

* * *

The first two numbers of *La Educación Nacionál*, a monthly journal, "organo de la Escuela normál de Preceptores de Santiago," show hopeful promise. The aims of the Comisión directiva are comprehensive and elevated. All success to the new comer!

* * *

The position—one of the writers says "the plight"—of English in the American High School is discussed in three papers in the September number of *Education* (Boston).

* * *

Mr. J. Lewis Paton, M.A., contributes to the July number of *Saint George* an admirable paper on "English Public Schools." "The problem for England at present is the development of Day Schools."

* * *

The *Revue de l'Enseignement des Langues vivantes*, among

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varied matters of literary interest, is running a spirited French verse translation of "Antony and Cleopatra," by Prof. L. Morel, Lycée Louis-le-Grand.

* * *

THE *Note-Book*, conducted by F. Harvey Hatchard and L. de Castarede, is the new organ of Sloan-Duployan Shorthand (2d. monthly). It gives also a dash of Esperanto, physical training, &c.

General.

AN exhibition of works of art (paintings, sculpture, engravings, and architectural designs) will be arranged in a special pavilion within the grounds of the Universal and International Exhibition to be held in Liège in 1905. The official regulations can be obtained from the Consul-General for Belgium, 29 Great St. Helen's, E.C.

* * *

AN urn containing the ashes of Sir Edwin Arnold has been placed in a niche in the chapel of University College, Oxford. Beneath is a tablet suitably inscribed.

* * *

CHICAGO UNIVERSITY will shortly inaugurate a Charity Chair, to provide courses of study and practical training in social and philanthropic work. The hope is to supply the demand for trained men and women in charitable reformatory institutions, social settlements, and home and foreign mission work.

* * *

DR. BURGE, of Winchester, writing on "The Problem of the Public-School Curriculum" (*Guardian*, September 7), "desires to see a small committee of schoolmasters appointed to take all the evidence available which can show what the experiments and experience of the last twenty years teach us, to report the evidence of witnesses in full, and to summarize the conclusions which can be drawn—in fact, to issue a blue-book."

* * *

AT the recent Carnarvon meeting of the Pan-Celtic Congress, Prof. Rhys, the Chairman, warmly complimented the enthusiasm and perseverance with which the people of Ireland have taken up the study of their ancient language.

* * *

THE Board of Education have published a memorandum drawing the attention of the authorities of training colleges to the recent Report of the Inter-Departmental Committee on the Model Course of Physical Exercises prepared by that Committee.

* * *

THE Board of Education have decided (says the *School Government Chronicle*) that, in future, schools owned by or connected with a company will be eligible for recognition only if the company is wound up and its property vested in the trustees for secondary education purposes.

* * *

THE Report of the Board of Education for 1903–4 has just been issued (Cd. 2271, 5½d.).

* * *

THE Calendar of the Northampton Institute (City Polytechnic) for 1904–5 is now ready (260 pages, with illustrations). Day courses in Technical Optics and Artistic Crafts appear for the first time; and there are various new developments in different departments of engineering. The evening courses began September 26; the day courses begin October 3.

* * *

THE Calendar for the tenth session (1904–5) of the London School of Economics and Political Science (University of London) gives very clear and full information as to the varied and useful courses of study provided.

ENGLISH IN SECONDARY SCHOOLS.

NEW REGULATIONS OF THE BOARD OF EDUCATION.

THE Board of Education have just issued fresh Regulations for the teaching of the English Language and Literature in Secondary Schools. They require in each school a course of general instruction, including the English language and literature (apart from history and geography), and extending over four years. In order to facilitate the adoption by secondary schools of systematic courses in English, the Board think it desirable to indicate in outline the points to which the attention of their inspectors will be directed, as regards:—

1. Granting approval of the course, and
2. Taking the course into consideration in estimating the efficiency of the school.

Each school desiring the approval of the Board for its course in English should be prepared to submit a course providing:—

1. A series of texts or selections graduated in difficulty, such graduation to depend not less on the method of handling the subject than upon considerations of language and subject-matter.
2. A suitably graduated series of exercises (repetition, meanings and use of words, analysis, including parsing, paraphrase, abstract or précis, composition or essay) connected with the language and subject-matter of the text.

Inspectors will be asked to report:—

1. As to the stages of instruction attained by the pupils on their entry upon the course.

The application of a test in the subject of English on admission to the course is desirable, and records of the results of such tests should be kept.

2. As to the number of hours or periods available per week for the subject.

The time allotted to English, apart from grammar, should not be less than three periods (of which one may be home-work); an additional school period is desirable for grammar, though it is not essential that the grammatical teaching should be concentrated in a single period.

3. As to the texts prescribed for study in each of the four years of the course.

Texts or portions of texts should be planned out for each term; and, where circumstances permit, one text a term may usefully be taken. As to length of text studied, no definite instructions are given by the Board, since the extent of ground to be covered cannot be considered apart from the amount of detail corresponding to the method of teaching adopted, or from the exercises and the like set forth in Section 4 below. The Board desire to leave freedom and wide scope to schools with regard both to texts and to methods of teaching, but would strongly urge schools not to provide elaborately annotated texts for the use of the scholars.

4. As to the exercises connected with the text and subject-matter.

The following exercises may be suggested:—(*a*) Repetition and reading aloud; (*b*) meanings and use of words; (*c*) analysis, including parsing; (*d*) paraphrase; (*e*) abstract or précis; (*f*) composition or essay. It need hardly be said that not all the exercises here suggested should be used in each month or even in each term; but each should be used from time to time.

Under each of the headings except (*a*) a set of corrected exercises worked by the class should be kept for the inspector's use, and it is desirable that under headings (*d*) and (*e*) model exercises should be provided and kept in a like manner.

SUGGESTIONS FOR A FOUR-YEAR COURSE IN ENGLISH IN ILLUSTRATION OF THE FOREGOING.

The following scheme is intended to indicate in rough outline some of the texts already in school use which may be so combined as to form a four-year course. It may also serve as a sample of the particulars which, with due allowance for local conditions (*i.e.*, examinations taken, proficiency of staff, &c.), should be submitted by every secondary school seeking the Board's approval of its course in English.

The Board desire it to be clearly understood that the details in the appended scheme are given merely by way of illustration, and are not to be regarded as comprising more than a few specimens of the numerous texts which may advantageously be studied.

In each year of the course poems or passages should, after study in the class, be prescribed for learning by heart; some of these may serve also for recitation. In exceptional cases of scholars with weak verbal memories, some other exercise connected with the text may usefully be substituted.

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Year of Course.	Age at Entry.	Texts: Poets.	Texts: Prose Authors.
I.	12–13	English Ballads. Lays of Ancient Rome. Hiawatha. Selected poems, mainly lyrical (*e.g.*, Children's Treasury).	Church's Stories of the Iliad, Odyssey, Æneid. Stories of King Arthur. Tales from the Northern Sagas (*e.g.*, Burnt Njal, Asgard and the Gods). Tales from The Faerie Queene. Stevenson's Treasure Island. Morris's Story of the Glittering Plain.
II.	13–14	Scott (*e.g.*, Lady of the Lake; Lay of the Last Minstrel). Longfellow (*e.g.*, Evangeline and general selections). Selected Poems (*e.g.*, Lyra Heroica *or* Poems of England).	Scott (*e.g.*, Talisman, Ivanhoe, *or* Legend of Montrose). Southey's Life of Nelson. Prescott (selections from Peru *or* Mexico). Voyages and Travels.
III.	14–15	Shakespeare (Julius Cæsar; Midsummer Night's Dream; *or* select passages and scenes). Milton (shorter poems). Tennyson (Idylls of the King). Gray (Elegy). Goldsmith (Traveller and Deserted Village) and Coleridge (Ancient Mariner). Wordsworth (simpler poems).	Macaulay, Biographical Essays. Scott (*e.g.*, Waverley, The Antiquary, *or* Old Mortality).
IV.	15–16	Shakespeare (Historical Plays *or* Comedies). Milton (Paradise Lost, Books 1 and 2). Spenser (Faerie Queene, Books 1 and 2). Wordsworth (selections). Tennyson (selections). Morris's Earthly Paradise (selections). Golden Treasury (First *or* Second Series).	Macaulay, Essays *or* History (Chapters 1 and 2). Burke (Reflections on the French Revolution.) Selections from The Spectator. Ruskin (Sesame and Lilies).

INSPECTION OF PRIVATE SECONDARY SCHOOLS

UNDER SECTION 3 OF THE BOARD OF EDUCATION ACT, 1899.

MEMORANDUM BY ONE OF H.M. INSPECTORS.

IN order to anticipate the questions of private secondary schools that may contemplate applying for inspection by the Board of Education under Section 3 of the Board of Education Act, 1899, the following notes on the procedure have been put together by one of H.M. Inspectors.

PRELIMINARY NOTE.

The Board of Education Act of 1899 (a short Act which must not be confused with the contentious Act of 1902) created the Board of Education by the fusion of the two Departments previously known as the Education Department and the Science and Art Department, and gave the Board powers, under Section 3, to conduct inspections of secondary schools where applied for. If desired, the educational inspection may be conducted by the Universities under this section. The Board arrange these inspections many weeks before they take place, and the report is not available until several weeks after the inspection. It follows, therefore, that at least four or five months may elapse between the application for the inspection and the receipt of the report. Hence, where the inspection is required so as to certify the Local Education Authority of the fitness of the school to take a definite place in connexion with the educational system of the county or county borough, no time should be lost in making application.

COST OF INSPECTION, AND CONDITIONS CONSEQUENT ON ACCEPTING COUNTY AID.

The charge for inspection can be ascertained on application to the Board at South Kensington. Hitherto a fee of £5 has been charged where the number of scholars does not exceed fifty. It may be calculated approximately at 2s. per head. In some counties and county boroughs the Local Education Authority offer to secondary schools within their area a grant towards the cost of each case. This enables private schools to reap the benefit of an impartial criticism which the inspection ensures; but it should be clearly understood that the acceptance of aid for this purpose from the Local Education Authority involves the sending of the report to the Education Committee. As, however, the Committee should regard the report as a confidential document, the sending of the report to the Committee should not deter efficient schools from applying for inspection. The rule of the Board is to send a copy of the report to the Local Education Authority if that body aids the school or contributes to the cost of the inspection.

PRIVACY OF THE REPORT.

In the case of privately owned schools, which pay the total charge of inspection, the reports, which may occupy some twelve to twenty pages of type-written foolscap, are (in the absence of special arrangements to the contrary) communicated to the principals alone, since it is only on their invitation that the school can be inspected. The report is thus, in ordinary cases, private as between the Board and the school, unless and until the latter otherwise decides. If, however, the school publishes the report in any way, it must publish it in full. The principal is perfectly free to show the report to any one, but commendatory remarks cannot be quoted (as, for instance, at prize distributions with reporters present) to the exclusion of other criticism of a less attractive, but probably more useful, character. It can scarcely be expected that many schools can sustain a thoroughly impartial criticism of this nature without having attention drawn to some matters requiring consideration. If, however, there is a desire to publish such reports, a brief notice against any adverse comment to the effect that the matter has now been remedied is likely to inspire confidence. Any such notice must, by signature or otherwise, be indicated as made on the responsibility of the school and not of the Board. The reports are not intended, in any way, to subserve purposes of advertisement, but primarily to certify the principal as to the general character and work of the school as viewed by impartial and experienced judges; and, in special cases, to deal with questions arising between the school and outside persons or bodies.

SCOPE OF THE INSPECTION.

The inspection is not confined to any particular section of the life or work of the school, but deals with every department, and with the school as a whole. In the case of private schools finance is only a matter of inquiry in so far as it may affect the character of the teaching. The reports would deal with the class-rooms and their equipment, the special facilities for any subject requiring other than class-room accommodation, such as music, art, science, gymnastics, the various domestic arts, &c., the boarding houses and general sanitary arrangements, playgrounds, and fields, &c. Everything that has a bearing on the corporate life of the school, the organization of games and excursions, the school magazine, art club, old boys' or old girls' clubs, &c., are matters of interest to the inspectors. The following receive special consideration:—The times assigned to different subjects, the details and gradations of syllabuses, the arrangement of the various time-tables; the qualifications and experience of teachers; the methods of teaching the various subjects of the curriculum as evidenced by lessons given in the presence of the inspectors; note-books; past work, and records of successes at public examinations; and, in fact, all the various elements that make for efficiency according to the special aims of the school. The inspection occupies one or more complete days, but includes nothing in the way of systematic examination, though the inspectors are not precluded from setting papers or putting oral questions at their discretion.

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THE INSPECTORATE.

The inspection is invariably carried out by at least two inspectors of the Board. In practice the Board vary the number from two to six, according to the size and character of the school. The reason for this is that the report can, if necessary, be prepared by specialists in the various subjects of the curriculum. In the case of girls' boarding schools, and most girls' day schools, at least one lady inspector attends. The inspectorate is composed of persons of wide experience in every department of life and work in all types of schools, and the permanent staff is reinforced, as occasion arises, by the employment of occasional inspectors of approved qualifications.

UTILITY OF THE INSPECTION.

Bearing in mind the comparative isolation of the average private school in England, an impartial survey such as is contemplated should be of much value to the principals, by bringing them into contact with those who have the best opportunities of seeing what is good or indifferent in similar schools throughout the country, and thus giving them a means by which their schools can effectively profit by detailed and contemporary experience.

REVIEWS.

A POPULAR HISTORY.

An Introductory History of England, from the Earliest Times to the close of the Middle Ages. By C. R. L. Fletcher, Fellow of Magdalen College, Oxford. (7s. 6d. John Murray.)

For all that has been written about the history of England, and for all the experience of the subject that Mr. Fletcher has had in the Oxford History School, he has chanced upon "certain uncomplimentary young gentlemen (near relations of his own) who were always complaining that they found history intolerably dull." A fortunate chance, for it has set Mr. Fletcher to relieve the history of his country from the reproach; and he could not be dull at the work even were he to try his hardest. His view is "that English History should be an inheritance of childhood; that its legends and its romance should grow into our thoughts from very early years, and should expand themselves with the expansion of our minds; that we should feel History, and dream of it rather than learn it as a lesson." Accordingly, he cannot bear to think of it as a task. "For English History as part of a school 'curriculum,' or as a means of education," he openly avers, "I have no such regard at all." Education is not the acquisition of information; the substitution of Modern History and so forth for Greek and Latin in the Oxford Schools is "nothing short of an irretrievable calamity": even the immense growth of the Oxford History School and of the Cambridge History Tripos in recent years is not at all "a healthy sign for English education." Such being his definite clear-cut opinions, "this little book, not being designed to pour information into any one, still less to help any one to pass any examination, is not fortified with any tables, summaries, or lists of dates"; and the author is too old-fashioned to call "Edith" "Eadgyth" or to spell "abbot" with an Anglo-Saxon (or Old English) "a" instead of the modern "o." Such independence is refreshing; for it is the self-reliance of a strong man, not the wilfulness of a weakling; and it prepares one for a fresh and unconventional narrative.

Romans, Saxons, Danes, Normans pass before us, and Englishmen play their part down to the Battle of Bosworth Field. But it is no ordinary political sketch that Mr. Fletcher presents: he goes right to the heart of his subject at each stage, and sets forth a vivid picture of the time, as well as of the prominent personages, so that from the dim, primitive bleakness of the period of the "River-drift men" down to the establishment and development of what we regard as law and order and civilized administration he exhibits the social panorama with strikingly dramatic effect, without sacrificing the facts of history—nay, rather, by deftly exhibiting them in their working relations. A notable example of this vivid actuality is seen in his exposition of the Domesday system by a comprehensive representative model—not an example from history, but an example constructed so as to embody all the essential elements.

It is quite needless to follow Mr. Fletcher in details. The book should be placed within reach of all pupils of the history age. It will impress the story of the time more effectively than any other book that we can name; not conflicting with the ordinary history of names and dates and summaries (which are all very well in their place), but conveying a general impression that no ordinary history can be expected to achieve. For Mr. Fletcher has so thoroughly realized the situations, and so lucidly and forcibly pictured them, that the subject will no longer be found "intolerably dull," but, on the contrary, intensely interesting and instructive. There are ten excellent and useful maps, and the volume—which runs to about 400 pages—is printed in large open type, and handsomely and serviceably bound.

MORE MEMORIES OF AN EX-INSPECTOR.

Other Memories, Old and New. By John Kerr, LL.D. (3s. 6d. Blackwoods.)

Dr. Kerr's friends, on reading his "Memories, Grave and Gay," naturally and properly asked for more; and Dr. Kerr humorously likens himself to "the Irishman who, dissatisfied with the offer of a *nip* of whisky, and asked if he would prefer a whole glass, replied: 'Ach, sor, I'm as aisy persuaded as a choild.'" The volume is not very large, but it is a tolerably good month's evening relaxation on a Lochlomondside holiday for a septuagenarian. The autobiographical element is modestly restricted—an Inspector of Schools has "no experiences of a historic, heroic, or romantic type"—and the main interest lies in a constant stream of anecdotage, illustrating character and custom, for the most part Scottish. Dr. Kerr does not vouch for the accuracy of the following story, but, if not authentic, at any rate it is *ben trovato*:—

Veitch was Professor of Logic and Rhetoric [at Glasgow]. His classroom was immediately above the Greek class-room. In treating of rhetoric his lectures sometimes ended with an eloquent peroration. On such occasions the applause of the students was, of course, exceedingly hearty, and once so very hearty as to cause a bit of plaster to fall from the ceiling into the Greek class-room, whereupon Jebb (now Sir Richard) is reported to have said: "I'm afraid our 'premises' will scarcely support my friend Veitch's 'conclusions.'"

Dr. Kerr himself at an early period had some difficulty in keeping himself out of a University chair. The story, indeed, borders on both the romantic and the heroic. A pupil of his had gained a medal at Edinburgh Academy, and he himself had been bracketed First Prizeman with another student in the Natural Philosophy class at the University, when the Chair of Natural Philosophy at St. Andrews became vacant. The pupil's father, delighted with his son's success, proposed that Dr. Kerr should stand for the chair.

He said he was intimate with Sir Hugh Playfair, who was at that time practically all-powerful in University matters, and could secure the appointment for me. I treated the proposal as ludicrous, and assured him that I was totally incompetent for such a position. . . . He would have it that I was far too modest. . . . that the classes in St. Andrews were small, and not difficult to manage, and that I would find myself perfectly competent. Notwithstanding my strongest remonstrances, he resolved that he would ask Sir Hugh to come to Edinburgh and have an interview with me. I begged him not to do so, but he stuck to his purpose, and brought Sir Hugh to meet me. I had little difficulty in convincing him that the proposal was entirely out of the question, and that I was as unfit to fill the chair in question properly as to take command of the Channel Fleet. I thus escaped what would have been a calamity for St. Andrews and misery for myself.

We are not sure about the calamity or the misery; but we doubt whether this act of self-abnegation can be paralleled in the history of the Scottish Universities.

The anecdotes are most varied, and the tone of the whole book is manly and sound. We quote a short example of the educational process:

A rapid conversion to orthodoxy is recorded of an old teacher who, in examining his pupils on their knowledge of a very simple manual—"The Mother's Catechism"—asked a boy if God had a beginning. "No," said the boy. "Will he have an end?" "Yes," he replied. This was followed instantly by a buffet on the side of his head. "Will he have an end noo?" "No," said the boy; and the master was satisfied.

One point of arrangement, we may add, is tolerably astute. Dr. Kerr's views on the whole duty of a reviewer are set out, not in his preface, but some ten pages from the end of the book. Providentially we discovered them in time!

LATER ADVANCES IN PHYSICS.

The Recent Development of Physical Science. By William Cecil Dampier Whetham, M.A., F.R.S. (7s. 6d. net. Murray.)

The man in the street probably knows as little as he cares about ions and electrons and gels, but he took a respectful interest in the discovery of argon and helium and in the liquefaction of

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air, and he perhaps exhibited a more active curiosity as to radium and wireless telegraphy. The idea of Mr. Whetham's volume, which traces and co-ordinates the more striking of the recent developments in physical science, is an admirable one, and an opportune, and he has executed it in a thoroughly capable manner, as becomes a Fellow of Trinity and of the Royal Society. Still, his work demands of the reader a considerable knowledge of the various departments of physical inquiry; and, though he cherishes valiantly "a profound belief in the possibility of treating the wider and deeper generalizations of natural science as fit subject-matter for current thought and literature," he can hardly be said to have broken down the teaching to the average capacity of comprehension and assimilation. Apparently he had no expectation of doing so, for he says that "until the point of view has been altered"—an expression of somewhat cryptic nature—"it is, perhaps, hopeless to look for a proper understanding of the scientific spirit and of scientific method even among the more educated portion of the community." What is wanted seems to be neither more nor less than the preliminary training, which is necessary here just as it is necessary in the advanced departments of all other studies, though in a higher degree than in those whose elements are more familiar, or at any rate more accessible. Mr. Whetham, indeed, appears to touch the spot when he remarks that, "although the development of physical science is one of the most powerful activities of our time, a knowledge of its aims, methods, and results has not yet been recognized as a necessary part of an English liberal education." And, even if this were so recognized, how many of us would still be left out in the dark!

Mr. Whetham first considers the philosophic foundations of physics, and then traces some of the more important developments of the experimental investigations of the physical laboratories in the last few years. In the study of physical equilibrium, the liquefaction of air and hydrogen, with which the name of Sir James Dewar is most prominently associated, is regarded as "the most striking recent work," though the activity of other eminent men of science is duly noted; and, on the processes of fusion and solidification, justice is done to Willard Gibbs and Roozeboom, to whose work we had occasion to refer the other month. The problems of solution in general, apart from conditions of equilibrium, bring the reader for the first time into contact with electrical phenomena. Then comes the treatment of the conduction of electricity through gases—pre-eminently the field of Prof. J. J. Thomson, whose great book on the subject we hope to notice soon. The three final chapters deal with Radio-activity, Atoms and Æther, and Astro-Physics. The panorama is very striking, and it is hopefully suggestive of further achievement. Newton stands as frontispiece; and there are portraits of Lord Kelvin, Van 't Hoff, and J. J. Thomson, with some forty figures, some of them full-page.

Infinitesimal Calculus.

A First Course in Infinitesimal Calculus. By Daniel A. Murray, Ph.D. (Johns Hopkins). (7s. 6d. net. Longmans.)

Among the elementary text-books on the calculus suitable for college students the present work is likely to obtain a leading place as possessing many of the best qualities that we seek in a treatise of the kind. In one respect, however—namely, the compressing of much information within the narrow compass of a volume of moderate size—the reader is tempted to wish that less had been accomplished; for the book would have gained considerably by a more generous allowance of space for text and by the choice of a larger scale for many of the diagrams. The defect, fortunately, does not to any great extent detract from the general excellence of the volume, and is one which may be easily remedied in future editions. In a manner which shows that he understands and enters sympathetically into the difficulties of the beginner, the author lays down the first principles both of the differential and of the integral calculus, discusses many of the methods based on these principles, and treats of many of the ordinary applications of the subject as a whole. He also introduces the student to the elements of differential equations. Numerous notes—suggestive, illustrative, or explanatory, as occasion demands—help to throw light on important points, and tend to enable the student to grasp more thoroughly the essence of the subject. Another attractive feature of the work is the constant guidance to helpful supplementary reading. Of the many references to other writers, some are given for the sake of indicating sources of fuller information; others are intended to be of service by directing attention to parallel demonstrations, for variation of language often furnishes a key to the solution of difficulties. The author desires, moreover, that all shall combine to "train the student in the use of mathematical literature" and to give him some knowledge as to reliable authors and their works. The text need not be studied in the order in which it stands; it is capable of being arranged in alternative courses to suit special cases. Although the English student will meet with occasional instances of unfamiliar nomenclature, he will not experience any inconvenience. It is not to the student alone that Dr. Murray's book may be expected to be acceptable: from the teacher's standpoint, the system of constantly indicating where collateral information may be found endows the volume with more than ordinary value. The book is amply provided with exercises, but such problems as are of a distinctly technical character are in general absent, since the author considers that very often the necessity for explaining the technicalities of some particular branch of applied science retards the progress of the principal subject under discussion. At the same time, for the benefit of those to whom such problems are of special significance, he suggests fruitful sources from which to derive them.

GENERAL NOTICES.

CLASSICS.

The Phaedo of Plato. Edited by Harold Williamson, B.A. (3s. 6d. Macmillan. Classical Series.)

Mr. Williamson writes "for the student of Greek rather than the student of philosophy"; but he necessarily deals with philosophical matters to a certain extent, summarizing the Platonic theory of ideas in the introduction, and elucidating particular points here and there in the notes. The worthy reader will, no doubt, be led to pursue the study in the larger commentaries of the late Sir William Geddes and Mr. R. D. Archer-Hind, and in the more special philosophical treatises. Mr. Williamson gives his main attention to "the interpretation and the language of the dialogue"—the first thing for the student. He takes Mr. Archer-Hind's text as basis, introducing a few variants, and supporting them (in the commentary) with ability and proper independence. The notes discuss all important points of grammar with much acumen and judgment, and in concise form. The edition will be most helpful in the higher forms of classical schools. The type is excellent and the binding is strong and serviceable.

Chambers's Latin Dictionary: Latin-English and English-Latin. (2s. net.)

Part I.—Latin-English (with full appendix of proper names)—occupies 444 pages in double columns, and Part II.—English-Latin—365 pages. The work is intended to serve for all the undergraduate work of schools and universities in Latin; and the selection and treatment of vocables may be deemed very judicious and careful. The prosodial quantities are marked with care, and unusual attention (for so small a compendium) has been bestowed on the etymology. Phrases and idiomatic expressions are freely given, and very numerous references are cited. The type is necessarily somewhat small, but it is very clear, and will probably occasion no trouble to young eyes. On a varied and deliberate test, it seems to us a remarkably good compilation. The binding is strong and flexible, capable of strenuous use.

Exercises in Latin Prose. By G. G. Ramsay, LL.D., Litt.D., Professor of Humanity in the University of Glasgow. Parts I. and II. (1s. 6d. each. Clarendon Press.)

These are two of three handy volumes into which the first volume of Prof. Ramsay's well known "Latin Prose Composition" (with some additions) has been distributed in order to meet the requirements of schools as to cost and otherwise. Part I. contains the easier exercises, with additional easy passages for translation into continuous prose, some of them selected from the second volume of the original work. Part II. is more advanced, with a similar set of continuous passages. Each contains a fair year's work; the one being suitable for scholars preparing to pass Lower-Grade Latin in the Leaving Certificate or University Preliminary examinations, the other for Higher-Grade pupils. Each is furnished with a full vocabulary. They are admirable manuals, constructed with notable care and judgment. The third volume will contain the syntax.

MATHEMATICS.

A Manual of Practical Mathematics. By Frank Castle, M.I.M.E. (6s. Macmillan.)

A book that will be very helpful to many students, and more especially to those to whom a knowledge of mathematics is valuable principally as a means to an end. The writer assumes an acquaintance with arithmetic and with the simpler parts of algebra. His volume does not contain an exhaustive treatment of any single subject, but the student of applied mathematical science will find in it an interesting discussion of such portions of various branches of mathematics as will enable him to make ready practical use of the powerful

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methods brought within his reach by a knowledge of higher mathematics, slight though it may be. The manual affords, indeed, a good illustration of what is possible in this direction. Algebra, Trigonometry, Mensuration, Differential and Integral Calculus, and Differential Equations are among the subjects from which selections are made. One of the chief difficulties facing the author of such a treatise is that of determining how much may safely be left out. We admit that, for the purposes of practical work, it is often advisable that the student should accept at first the results established by others, postponing until later the consideration of their rigid proof. In such cases, however, he ought to understand clearly what assumptions are made and what limitations exist, and he should know where to obtain precise information. The principle is recognized in the present work, but requires to be more closely followed, as will be evident at once from a reference to the sections devoted to the well known series of Taylor and Maclaurin.

Tables of Logarithms and Decimals. Compiled by F. G. Burkitt. (Simpkin, Marshall, & Co.)

Useful and apparently reliable tables computed in most cases to four figures, and suitable for the purpose of simplifying many business calculations. They are preceded by a short discussion of logarithms and how to manipulate them and by a series of worked examples illustrating the practical application of the subject. Some slight deviations from the regular notation and nomenclature are noticeable.

The "A. L." Problematic Arithmetic, Scheme "B." Edited by Alfonzo Gardiner. Standards I. and II., each 1d.; cloth, 2d. Standards III. to VI., each 2d.; cloth, 3d. Standard VII., 3d.; cloth, 4d. E. J. Arnold).

The special features are (1) that even the simplest exercises take, as a rule, the form of problems, and (2) that the type employed in the text is large and clear, and the form of publication attractive. Worked examples, accompanied by explanations (when necessary), introduce the various rules.

Elementary Geometry, Section III. By Frank R. Barrell, M.A., B.Sc. (1s. 6d. Longmans.)

The concluding section of the author's treatise on elementary geometry, the earlier portions of which have already been noticed. The Third Section includes the subject-matter of Euclid's Eleventh Book, and discusses also the surface and volume of the cylinder, cone, sphere, and other simple solids. The treatment of the text is good, and most of the diagrams are exceptionally effective.

Messrs. Hall and Stevens's *A School Geometry, Parts I.–V.* (4s. 6d., Macmillan), has promptly reached a second edition, revised. A few less important propositions have been reduced to the rank of exercises, and thus room has been found for more numerical and graphical exercises and experimental work; and some other changes have been made, all for the better.

Mr. Rawdon Roberts's *A New Geometry for Beginners* (1s. 6d., Blackie) has met with a like success, and now, after being twice reprinted last year, it appears in a second edition, revised and enlarged. Considerable additions have been made to meet the requirements of the London Matriculation, Oxford and Cambridge Local, and other examinations.

SCIENCE.

The Classification of Flowering Plants. By Alfred Barton Rendle, M.A., D.Sc., F.L.S., Assistant in the Department of Botany, British Museum, and Lecturer in Botany at the Birkbeck College. Vol. I.: *Gymosperms and Monocotyledons.* (10s. 6d. net. Cambridge University Press. Cambridge Biological Series.)

The first chapter furnishes a most interesting account of the historical evolution of plant classification, with incidental critical remarks. Dr. Rendle largely follows the system adopted by Prof. Engler, of Berlin. "This system is based on Eichler's arrangement, and has the merit of attempting to discriminate between those apetalous orders which represent a primitive simplicity and stand more or less alone and those, on the other hand, which have near allies among the polypetalous group and which should therefore be relegated wherever possible to their natural position." Gymnosperms and Angiosperms are treated as parts of the great primary group of Phanerogams or Spermatophytes; although indications of facts that may yet lead to a modification of this arrangement are at least suggested. The work, of course, is pretty severely technical, and it has been executed with laborious care and with great ability. There are 187 figures. The volume is handsomely produced.

Electricity in the service of Man. By R. Mullineux Walmsley, D.Sc. Lond., F.R.S.E., Principal, and Head of the Electrical Engineering Department, of the Northampton Institute, London. (10s. 6d. net. Cassell.)

Like its subject, this work has undergone great development since its first appearance in 1888, when it consisted mainly of a translation from the German of Von Urbanitzky, edited, with numerous additions, by Dr. Wormell. Two further editions were brought out by Dr. Wormell and Dr. Walmsley respectively. Now Dr. Walmsley has made a new book of it; the old material remains only so far as it could be utilized in the historical sections. The First Part (pages 1–688) deals with the history and principles of electrical science, and affords means of a clear grasp of the fundamental laws upon which the remarkable developments of the past generation have been based. Part II. (pages 689–1,192) treats in two divisions: (1) the generation, transmission, and utilization of electrical power; and (2) practical applications of small electric currents. The most recent developments are shown, and the underlying principles and methods are more fully discussed; yet, though the index takes the work beyond 1,200 ample pages, it has been necessary to omit certain portions of the projected scheme, and these are to be placed in a supplementary volume. There are 6 plates and 1,208 figures. An excellent popular exposition, handsomely furnished forth.

ENGLISH LITERATURE.

Loci Critici: Passages illustrative of Critical Theory and Practice from Aristotle downwards. Selected, partly translated, and arranged, with Notes, by George Saintsbury, M.A. Oxon., Hon. LL.D. Aberd., Professor of Rhetoric and English Literature in the University of Edinburgh. (7s. 6d. Ginn.)

The study of "Rhetoric" is looking up again, to some extent at least in England, and in more lively fashion, if in somewhat different form, in America; and there could be no surer guide than Prof. Saintsbury to a choice of illustrative extracts, as his great work on the "History of Criticism," just completed, amply demonstrates, to say nothing of his practical experience at Edinburgh. The work is generally described with fullness and accuracy on the title-page as quoted above. Prof. Saintsbury gives "nothing more than the actual text (with such annotation as may be barely necessary to comprehension)" of the passages which experience has shown him to be most useful for the purpose. "The passages chosen from the enormous bulk at hand are such as may best illustrate the *general* drift of criticism in modern Europe, with a few exceptions and singularities' (pages 77–435); the earlier pages being devoted to the leading Greek and Latin critics from Aristotle to Boethius. "The exclusion of living writers and of very modern critical phases is deliberate" and judicious. The collection is ample and representative, and it is thoroughly practical in purpose. We trust it will be widely used here as well as in America.

Select Translations from Old English Poetry. Edited by Albert S. Cook, Professor of the English Language and Literature, and Chauncey B. Tinker, Foote Fellow in English, in Yale University. (4s. 6d. Ginn.)

"Translated, where that is possible, rather than traduced"—such has been the ideal of the authors; and their selection is catholic, not representing any particular theory of translation to the exclusion of others. Whether we agree or disagree as to the qualities of the poetry or the accomplishments of the poets, we recognize that the idea is excellent and that it has been efficiently carried out. The pieces are very fairly representative of the best old English poetry, and we make no difficulty about the classification of them, or about minor liberties taken with the extracts in respect of details for the sake of uniformity. The volume will interest general readers in our pre-Chaucerian literature, and may attract some of them to essay the originals—no very difficult achievement indeed. It is liberally printed, and nicely and strongly bound. Indeed, it should be in the hands of all students of the literary period represented.

ENGLISH READERS AND TEXTS.

Arnold's Home and Abroad Readers. Books I.–VI. (10d., 1s., 1s. 3d., 1s. 6d., 1s. 6d., 1s. 6d. Edward Arnold.)

An attractive new series, boldly printed on good paper, liberally and efficiently illustrated, and substantially bound. While the matter is generally interesting and suitable to the pupils, its main object appears to be to convey gradually a comprehensive idea of the Empire and of the World, and of the relation of the inhabitants to the various countries and to each other. Book I. (135 pages) gives "Glimpses of the Homeland"—first ideas of geography, descriptions of walks in town and country and by the sea (conversationally). Book II. (152 pages) depicts in simple lessons the life of the peoples in the most interesting countries of the world, Greater Britain in front. Book III. (200 pages) is concerned chiefly with the physical features and industries of England and Wales. Book IV. (232 pages) surveys "The British Dominions." Book V. (228 pages) deals with "The World's Great Powers, Past and Present," not forgetting Japan. Book VI. (228 pages) reviews "The World's Trade and Traders." Illustrations in colour and in black and white are abundant and judiciously chosen. The series, while having many features in common with other series, is very distinctive in general character. It makes a strong bid for acceptance, and will no doubt gradually make its way to the front.

The Jack Readers. (1) Learning to Read—Step One. By Emile S. Mortimer. 3d. (2), (3), (4) Books I., II., and III. By Thomas Cartwright, B.A., B.Sc. Lond. (8d., 10d., 1s. T. C. & E. C. Jack.)

Mr. Mortimer adheres to an "entirely phonic" system, and, although

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every page has its coloured illustration, he has not permitted the artist to dominate him. The three readers are attractive in matter, varied, and interesting, much verse (not a little of it Mr. Cartwright's own) being judiciously interspersed, and the didactic attitude being avoided. They are abundantly and usefully illustrated, partly in colour, and the get-up is agreeable and substantial. The paper is toned and good, showing up effectively the special type. The series is sure to gain favour widely.

Blackie's English School Texts. Edited by W. H. D. Rouse, Litt.D. (8d. each.)

Handy volumes in limp cloth (very similar to the supplementary series of complete French plays), 112 to 128 pages each, clearly printed and tastefully got up. The matter is good, and the series promises plentiful variety. We have four specimens: (1) Defoe's *Journal of the Plague*; (2) Richard Hawkins's *Voyage into the South Seas*; (3) *A Christmas Carol* (Dickens); and (4) *Companions of Columbus* (Washington Irving). These little books should get read far beyond school.

"McDougall's Supplementary Readers." No. 1, *Scenes from Waverley* (Scott); No. 2, *The Coral Island* (Ballantyne), abridged—present good and attractive matter in excellent type and get-up (2d. paper, 3d. cloth, each).—Of the "A. L. Bright Story Readers" we have No. 40, *Stories from the Life of King Alfred*, prepared by Chas. A. Melford, and suitable for Grade IV.; and No. 62, *Ancient British Heroes*, a series of tales from the "Mabinogion," prepared by I. G. Maguire, and suitable for Grade VI. (4d. each, E. J. Arnold). Both are well printed, and are most interesting.—*Kate's Party* (32 pages, 2d.) is the latest addition to "Chambers's Complete Tales for Infants."

MODERN LANGUAGES.

Nouveau Dictionnaire Anglais-Français et Français-Anglais. Par E. Clifton. Ouvrage entièrement refondu et considérablement augmenté par J. McLaughlin, Officier de l'Instruction publique, Professeur à l'Institut Commercial de Paris, Professeur honoraire au Collège Sainte-Barbe. (In-18 relié toile, 5fr. Garnier Frères.)

Clifton's pocket dictionary had immense vogue for some forty years, but the publishers have laudably wished to present the work in fuller modern form. Mr. McLaughlin has accordingly submitted it to unsparing revision, and more than doubled the size, while Messrs. Garnier have actually reduced the price. The English-French part extends to 658 pages in double columns; the French-English part to 673. The work is based on the larger dictionary of E. Clifton and Grimaux, which has served for a generation as a mine for dictionary compilers; and it is practically a new book, with vocabulary up to date, and framed to meet the necessities of students in the most diverse subjects. Phrases and idioms are given in considerable number and in judicious selection. The type is clear, though necessarily small; the binding is flexible; and the book is handy. An excellent work for school or for private use.

Oxford Modern French Series. Edited by Léon Delbos, M.A., Instructor in French in H.M.S. "Britannia." (Clarendon Press.)

Last month we heralded the appearance of this series, and now we have before us the first eight volumes. There is (1) *Deux Héroines de la Révolution Française* (Madame Roland and Charlotte Corday), from Lamartine's "L'Histoire des Girondins," edited by Mary Bentinck Smith, Lecturer in Mediæval and Modern Languages at Girton (192 pages, 2s. 6d.). (2) *La Vendetta* and *Pierre Grassou* (Balzac), edited by Marie A. Péchinet, B.A., Senior Staff Lecturer in French in the Royal Holloway College (140 pages, 2s.). (3) *Bug-Jargal* (Hugo), edited by Louis Sers, B.-ès-L., French Master at Wellington College (152 pages, 2s.). (4) *Mademoiseile de la Seiglière* (Sandeau)—the novel—edited by A. L. Dupuis, French Master in King's College, London (214 pages, 2s. 6d.). (5) *Mémoires d'Outre-Tombe* (Chateaubriand), edited by Louis Sers (164 pages, 2s. 6d.). (6) *Voyage autour de mon Jardin* (Karr), edited by Stuart G. Hallam, M.A., Beechmont Preparatory School, Sevenoaks (148 pages, 2s.). (7) *Le Château de Vaux* (Gozlan), edited by A. H. Smith, M.A., Whitgift School (92 pages, 1s. 6d.). (8) *Quinze Jours au Désert* and *Voyage en Sicile* (Tocqueville), edited by J. E. Mansion, B.-ès-L., Royal Belfast Academical Institution (122 pages, 2s.). The variety, the interest, and the excellence of the matter are obvious from the mere enumeration; and the notes deal briefly with points of literary, historical, and geographical importance, some little command of the language being assumed. The paper and type are excellent, and the binding is strong. An excellent and welcome series, most serviceable in the higher classes in schools, and attractive to the general reader of French.

MUSIC.

Bell's *Miniature Series of Musicians*, edited by G. C. Williamson, Litt.D., extends already to six volumes (1s. net, each): Beethoven, Gounod, Handel, Mendelssohn, Mozart, Sullivan. Each biography is capitally written by a well known expert, and each volume is liberally illustrated, the portrait of the subject being frontispiece. The series is bound to be popular, as it thoroughly well deserves to be.

The *Chart of the Rules of Counterpoint*, by Arthur Somervell (1s., Clarendon Press), is a companion to the author's "Chart of the Rules

(*Continued on page* 444.)

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MATHEMATICS.

15516. (Hon. G. R. Dick.)—The surface whose co-ordinates at any point are given by

$$x = \rho\cos\phi,\quad y = \rho\sin\phi,\quad z = b\phi + c\int[(\rho^2+b^2)/(\rho^2-c^2)]^{\frac{1}{2}}\,d\rho/\rho$$

is a minimum surface: exhibit them in Monge's form; also the surface

$$\sin z = \sinh x \sinh y.$$

Solution by the Proposer.

(1) It will be found that the values

$$4x = (c+bi)(a+1/a)+(c-bi)(\beta+1/\beta),$$
$$4yi = (c+bi)(a-1/a)-(c-bi)(\beta-1/\beta),$$
$$2z = -(c+bi)\log a+(c-bi)\log\beta$$

satisfy the equation, a and β being arbitrary.

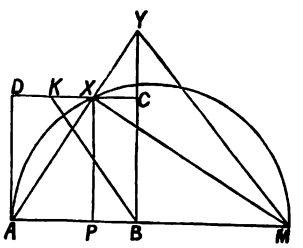
(2) With regard to the surface $\sin z = \sinh x \sinh y$, the forms are

$$x = \tfrac{1}{2}\log(1+ai)/(1-ai)+\tfrac{1}{2}\log(1-\beta i)/(1+\beta i),$$
$$y = \tfrac{1}{2}\log(1+a)/(1-a)+\tfrac{1}{2}\log(1+\beta)/(1-\beta),$$
$$iz = \tfrac{1}{2}\log(1-a^2)/(1+a^2)+\tfrac{1}{2}\log(1+\beta^2)/(1-\beta^2).$$

15102. (J. Prescott, B.A.)—Given a square ABCD; draw a line through A to meet CD in X and BC produced in Y so that XY may be equal to a given length.

Solutions (I.) *by the* Proposer; (II.) *by* C. E. Youngman, M.A.; (III.) *by* D. Biddle.

(I.) Let CK be the given length to which XY must be equal. On AB produced cut off BM = BK. On AM describe the semicircle AXM, meeting DC in X. Join AX and produce to meet BC in Y. Then XY = CK. Draw XP parallel to CB. Then the triangles XPM and ABY are similar and equal.



Now $XY^2+XM^2 = MY^2$
$= BY^2+BM^2$
$= BY^2+BK^2 = BY^2+BC^2+CK^2 = PM^2+BC^2+CK^2$
$= XM^2+CK^2$;

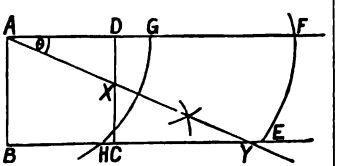
therefore $XY = CK$.

(II.) Writing θ for the angle DAX, a for the side of the square, and d for the given length, we have $a = a\tan\theta + d\sin\theta$

or $d/a = (\cos\theta-\sin\theta)/\sin\theta\cos\theta$;

$\therefore\ d^2/4a^2 = (1-\sin 2\theta)/\sin^2 2\theta$;

$\therefore\ 2a\operatorname{cosec} 2\theta = a+\sqrt{(a^2+d^2)}$.



Hence the construction:—On BC produced take CE, the given length; on AD produced DF = DE; bisect AF at G; with centre A and radius AG cut BC at H; and draw AXY bisecting the angle GAH.

(III.) Let AB = unity,

$XY = 2a,\quad \angle BAY = \theta.$

Then $\sec\theta-\operatorname{cosec}\theta = 2a,$

whence

$$\sin\theta-\cos\theta = a\sin 2\theta,$$

or $[\frac{1}{2}(1-\cos 2\theta)]^{\frac{1}{2}}-[\frac{1}{2}(1+\cos 2\theta)]^{\frac{1}{2}}$
$= a\sin 2\theta.$

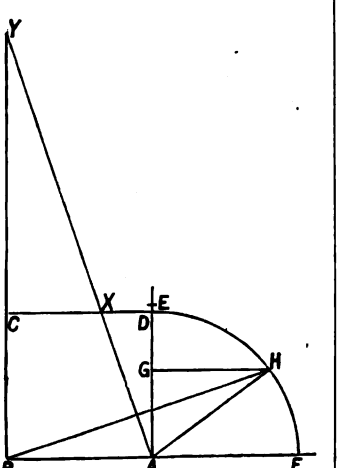
Squaring both sides, we have

$$1-\sin 2\theta = a^2\sin^2 2\theta,$$

whence

$$\sin 2\theta = 1/a[(1+1/4a^2)^{\frac{1}{2}}-1/2a].$$

This value is easily obtainable geometrically, but to represent the process would complicate the diagram. Therefore, let AG = the value of $\sin 2\theta$ in terms of a, as given above, the value of a being represented by AE. With radius AD describe the arc DF, to meet BA (produced) in F. Draw GH parallel to BA to meet the arc in H, and join BH. It is easy to see that the required line AY intersects BH at right angles.



15600. [*Communicated by* Rev. T. Roach, M.A.]—Four pennies are placed flat on a table so that each touches two of the others. Find when the space enclosed between them is a minimum or maximum.

Solution by Rev. T. Wiggins, B.A.

Let r be the radius of a penny and let a be an angle of the rhombus formed by joining the centres of the touching circles.

Required area = area of rhombus − sum of sectors $= 4r^2\sin a-\pi r^2$.

Hence the area is a maximum when $a = 90°$. The minimum value of a is 60°, viz., when the opposite pennies touch; therefore

$$\text{maximum} = r^2(4-\pi),\quad \text{minimum} = r^2(2\sqrt{3}-\pi).$$

Note.—The Editor remarks that strictly speaking 60° is the lower *limit* of a and is never actually reached unless the words of the Question, "Each touches two of the others," are interpreted "Each touches *at least* two of the others": for when $a = 60°$ in two cases out of the four a penny touches each of the other three.

15549. (A. M. Nesbitt, M.A.)—CP, CQ are conjugate semi-diameters of an ellipse. If the triangle CPQ be of constant area, prove that the envelope of PQ is a similar ellipse.

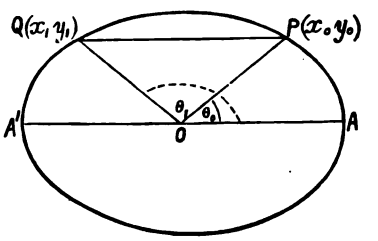
Solutions (I.) *by* Professor Sanjána, M.A.; (II.) *by* W. Scrimgeour, M.A., B.Sc., *and others.*

(I.) If CP, CQ are conjugate, the area CPQ is always constant and equal to the area CAB, where CA, CB are principal semi-axes. But the result is true even when CP, CQ are not conjugate. Let the eccentric angles of P, Q be a, β respectively; then $\Delta CPQ = \frac{1}{2}ab\sin(a-\beta)$; hence for area to be constant $a-\beta$ must be fixed and equal to 2ϕ, suppose. The equation to the chord PQ is then seen to be

$$x\cos\tfrac{1}{2}(a+\beta)/a+y\sin\tfrac{1}{2}(a+\beta)/b = \cos\phi;$$

and by ordinary working we get for the envelope $x^2/a^2+y^2/b^2 = \cos^2\phi$, which is a similar and concentric ellipse. In the case when CP, CQ are conjugate, $2\phi = \frac{1}{2}\pi$, and the envelope becomes $x^2/\frac{1}{2}a^2+y^2/\frac{1}{2}b^2 = 1$.

(II.) The triangle CPQ is always constant.



$P = (x_0, y_0),\quad Q = (x_1, y_1).$

Let $\angle ACP = \theta_0,$

$\angle ACQ = \theta_1,$

$CP = l_0,\quad CQ = l_1;$

also let the eccentric angle of P be ϕ; then the co-ordinates of P are $a\cos\phi$, $b\sin\phi$; then the eccentric angle of Q is $\phi+\frac{1}{2}\pi$, the co-ordinates of Q are $-a\sin\phi$, $b\cos\phi$.

$$2\Delta PCQ = l_0l_1\sin(\theta_1-\theta_0) = l_0\cos\theta_0\, l_1\sin\theta_1-l_0\sin\theta_0\, l_1\cos\theta_1$$
$$= x_0y_1-x_1y_0 = a\cos\phi\, b\sin(\phi+\tfrac{1}{2}\pi)-a\cos(\phi+\tfrac{1}{2}\pi)\, b\sin\phi$$
$$= ab\sin\tfrac{1}{2}\pi = ab.$$

The equation of the line PQ is

$$x/a\cos\tfrac{1}{2}[\phi+(\phi+\tfrac{1}{2}\pi)]+y/b\sin\tfrac{1}{2}[\phi+(\phi+\tfrac{1}{2}\pi)] = \cos\tfrac{1}{2}[\phi-(\phi+\tfrac{1}{2}\pi)]$$

or $$x/a\cos(\tfrac{1}{4}\pi+\phi)+y/b\sin(\tfrac{1}{4}\pi+\phi) = 1/\sqrt{2},$$

i.e., $$x/a(\cos\phi-\sin\phi)+y/b(\cos\phi+\sin\phi) = 1.$$

Now, if l and m in the equation $lx+my = 1$ satisfy the equation $a^2l^2+b^2m^2 = 1$, the line will always touch the ellipse $x^2/a^2+y^2/b^2 = 1$.

Here $$[a^2(\cos\phi-\sin\phi)^2]/a^2+[b^2(\cos\phi+\sin\phi)^2]/b^2 = 2$$

or $$(a/\sqrt{2})^2[(\cos\phi-\sin\phi)^2]/a^2+(b/\sqrt{2})^2[(\cos\phi+\sin\phi)^2]/b^2 = 1;$$

therefore PD always touches the ellipse $x^2/(a/\sqrt{2})^2+y^2/(b/\sqrt{2})^2 = 1$. $2b^2x^2+2a^2y^2 = a^2b^2$, a similar ellipse.

15479. (H. G. Graves.)—If x be the area of one of the faces of a tetrahedron; A, B, C the dihedral angles over x; and

$$M = \sqrt{(1-\cos^2A-\cos^2B-\cos^2C-2\cos A\cos B\cos C)},$$

show that A/M has the same value for all the solid angles.

Solution by Professor Nanson.

Project on the face f_q the other three faces; then we get $\Sigma_p(pq)f_p = 0$, where (pq) is the cosine of the angle between the faces f_p, f_q and $(pp) = -1$. Hence the determinant $|(pq)|$ vanishes and the co-factors of parallel lines therein are therefore proportional, so that, if $[pq]$ is the co-factor of (pq), we have $f_1^2, f_2^2, \ldots; f_1, f_2, \ldots$ proportional to $[1,1], [2,2], \ldots; [1,2], \ldots$, which gives the required result.

15521. (Lt.-Col. Allan Cunningham, R.E.)—If σN denote the sum of the sub-factors of N (including 1, but excluding N), obtain some solutions of $\sigma N = X^2$ (an *even* square).

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Solutions (I.) *by the* PROPOSER; (II.) *by* JAMES BLAIKIE, M.A.

(I.) Solutions of this question may be obtained in many ways. The process being indirect, the form of solution must be assumed. One such process is: Let $P = 2^{q-1}M_q$, where $M_q = 2^q - 1$, a prime (q being prime). Also let $N = P.p$, where p is an odd prime, but $\neq M_q$. Let $\int N$ denote the sum of all the divisors of N. Then, P being a perfect number, $\int P = 2P$, also $\int p = p + 1$. And, by definition,

$$\sigma N = \int P p - P p = \int P . \int p - P p ;$$

therefore

$$X^2 = \sigma N = 2P(p+1) - Pp = P(p+2) = 2^{q-1}.M_q(p+2).$$

This involves $p = M_q - 2 = 2^q - 3$, a prime. Then there is a solution whenever (2^q-1), (2^q-3) are both prime, which gives

$$N = 2^{q-1}(2^q-1)(2^q-3), \quad X = 2^{\frac{1}{2}(q-1)}(2^q-1).$$

Ex.—$q = 3$ gives $N = 2^2.7.5$, $X = 2.7$; $q = 5$ gives $N = 2^4.31.29$, $X = 2^2.31$, and there are no more of this form up to $q = 149$ at least. Another form giving many cases is $N = 2^r.p$.

(II.) Let $X = 2m$. If $4m^2 - 3 = p$, a prime, then, if $N = 2p$, its factors are

$$\sigma N = 1 + 2 + p = 3 + p = 4m^2 = X^2.$$

Thus N satisfies the condition. *E.g.*, let $m = 2$, $p = 13$, $N = 26$. Similarly we obtain 122, 194, 386, 794, 1146, ... Again, if $4m^2 - 7 = 3p$, where p is prime, then $N = 4p$ satisfies the condition. *E.g.*, $m = 2$, $p = 3$, $N = 12$. Similarly we obtain 76, 124, 332, ... Other solutions are $N = 8p$, where $4m^2 - 15 = 7p$, giving 24, 56, ..., and $N = 18p$, where $4m^2 - 39 = 21p$, giving 90, ... And so on.

15580. (Professor SANJÁNA, M.A.)—A parabola has contact of the second order with $y^2 = 4ax$ at the vertex, and cuts it again at the point whose normal is inclined at $\tan^{-1} m$ to the axis. Prove that its equation is $(4x + my)^2 = 4am^2x$.

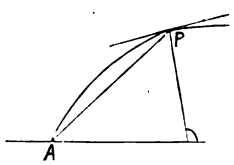
Solutions (I.) *by* R. TUCKER, M.A.; F. W. REEVES, B.A., *and others*; (II.) *by* FRANCES E. CAVE, C. A. B. GARRETT, *and* A. M. NESBITT, M.A.

(I.) The equation to AP is

$$my + 2x = 0 ;$$

hence the curve is

$$y^2 - 4ax - \lambda x(my + 2x) = 0 \quad \ldots\ldots(\text{i.}).$$



Hence, for (i.) to be a parabola, we must have $4 . 1(-2\lambda) = \lambda^2 m^2$, *i.e.*, $m^2\lambda = -8$, and (i.) becomes $(4x + my)^2 = 4am^2x$ (*cf.* C. Smith, *Conics*, § 230).

(II.) Let the equation of the parabola be $(ax + \beta y)^2 + px + qy + r = 0$. Then 0, 0, 0, $-2am$ are roots of $(ay^2/4a + \beta y)^2 + p(y^2/4a) + qy + r$; therefore $r = 0$, $q = 0$, $4a\beta^2 + p = 0$, $2\beta = 2am\,(a/4a)$; therefore the equation may be written $(4x + my)^2 = 4am^2x$.

Remarks on MR. A. M. NESBITT'S *Note on the Solution of certain Equations.*

By Professor SANJÁNA.

[See *Reprint*, Vol. VII. (New Series), pp. 41 and 42.]

It is undoubtedly true that the equality

$$\frac{x}{a+\theta} + \frac{y}{b+\theta} + \frac{z}{c+\theta} - 1 = \frac{(\lambda-\theta)(\mu-\theta)(\nu-\theta)}{(a+\theta)(b+\theta)(c+\theta)} \quad \ldots\ldots\ldots\ldots(\alpha)$$

is satisfied by $\theta = 0$; this is due to its being an identity, and other values of θ, though not so simple, must also satisfy it. This does not vitiate the process, which consists not in solving for θ from a cubic or quadratic, but in equating the coefficients of the various powers in $A + B\theta + C\theta^2 = 0$ to zero. This gives three equations in x, y, z, one of which is

$$\Sigma bcx = abc + \lambda\mu\nu ;$$

the other two are also simple equations, so that x, y, z are determined uniquely. The final result is the same, but it is best to obtain it in the ordinary fashion from (α), by multiplying successively by $a+\theta$, $b+\theta$, $c+\theta$, and then putting $\theta = -a$, $-b$, $-c$, respectively, as some difficult factorization is thereby avoided. The identity is certainly satisfied by making θ infinite.

15512. (R. TUCKER, M.A.)—PQ is a chord of a parabola, constant in direction. PR, QR are also chords drawn in a constant direction. Show that the locus of R is a parabola.

Solution by Professor NANSON.

Consider the more general problem of finding the locus of the vertex R of a triangle whose base angles P, Q lie on a fixed conic S, and whose sides QR, RP, PQ pass through fixed points A, B, C. Clearly there are four positions of R on AB, viz., two at A and two at B. The locus of R is therefore a quartic with nodes at A, B, and passes through the six meets of S with CA, CB, and the polar of C. If now A, B, C are collinear, the quartic breaks up into a conic S′ and the line ABC counted twice. The meets of S′ with ABC are clearly real or imaginary according as the meets of S with ABC are real or imaginary. Hence, if ABC touches S, it also touches S′. Thus in the proposed Question the required locus is a parabola whose axis is parallel to that of the given parabola.

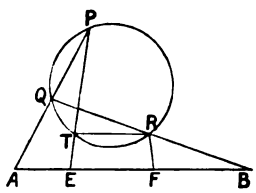
In the general case the remaining two meets of S and the quartic give the solution of Castillon's problem to inscribe in S a triangle whose sides pass through fixed points. (*Cf.* Salmon, Art. 297, Ex. 7.) When S is a pair of lines the quartic breaks up into two MacLaurin conics.

Geometrical Note on Inversion.

By R. F. DAVIS, M.A.

(*Extracted by kind permission from "Mathematical Gazette."*)

Let A, B be fixed points, P a variable point; $AQ . AP = k^2$ and $BR . BQ = k'^2$; so that R is the inverse of the inverse of P.



About PQR describe a circle and draw the chord RT parallel to AB. Produce PT to meet AB in E. Then

$$\angle PEB = \angle PTR = \angle PQR\,(\angle PQB);$$

therefore P, Q, E, B are concyclic and $AE . AB = AQ . AP = k^2$. Therefore E is a fixed point. From R draw RF, making $\angle RFB = \angle TEA$, so that TEFR is a symmetrical trapezium and FR = ET. Then $\angle RFB = \angle TEA = \angle ETR = \angle AQR$; therefore Q. A, F, R are concyclic and $BF . BA = BR . BQ = k'^2$. Therefore F is a fixed point.

Again, from the similar triangles PAE, BRF, EA : EP = FR : FB; wherefore FR . EP (or ET . EP) = EA . FB = constant.

Hence, if P describe any curve, R describes the geometrical image in the perpendicular bisector of EF of the inverse of the curve with respect to E. Thus, no matter what centres and constants of inversion are taken, repeated inversions of any plane curve will only give different inversions of a series of reflections of the original curve.

15556. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Factorise completeyl into *prime* factors $N = G_4^4 + 8 + F_4^4$, where $G_n = F_0 . F_1 . F_2 . \ldots . F_{n-}$ and $F_n = 2^{2^n} + 1$, a Fermat's number.

Solution by the PROPOSER.

Let $E_n = 2^{2^n}$; then $E_{n+1} = E_n^2$ and $F_n = E_n + 1$.

$$G_4 = (2^1-1)[(2^1+1)(2^2+1)(2^4+1)(2^8+1) = (2^{16}-1) = E_4 - 1.$$

Similarly $G_n = E^n - 1$, $N_n = G_n^4 + 8 + F_n^4 = (G_n^4 + 4 . 1^4) + (F_n^4 + 4 . 1^4)$. Each of these terms is a Bin-Aurifeuillian; therefore

$$\begin{aligned} N_n &= [(G_n-1)^2 + 1^2][(G_n+1)^2 + 1^2] + [(F_n-1)^2 + 1^2][(F_n+1)^2 + 1^2] \\ &= [(E_n-2)^2 + 1](E_n^2 + 1) + (E_n^2 + 1)[(E_n+2)^2 + 1] \\ &= (E_{n+1} + 1)\,2\,(E_n^2 + 5) = 2\,(E_{n+1} + 1)(E_{n+1} + 5). \end{aligned}$$

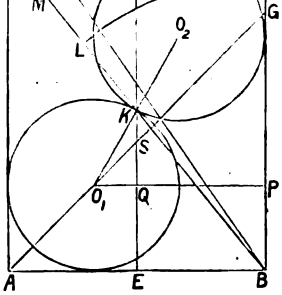
Ex.—Taking $n = 4$,

$$\begin{aligned} N &= G_4^4 + 8 + F_4^4 = 2\,(2^{32} + 1)(2^{32} + 5) \\ &= 2\,(641 . 6700417)(27 . 47 . 3384529). \end{aligned}$$

15567. (SOLIDUS.)—Two equal circular discs are to be cut out of a rectangular piece of paper 10 inches long and 8 inches broad. What is the greatest possible diameter of the discs?

Solutions (I.) *by* D. BIDDLE; (II.) *by* JAMES BLAIKIE, M.A., *and* B. C. WALLIS, F.C.P.; (III.) *by* GEORGE SCOTT, M.A., *and* I. ARNOLD.

(I.) It is easy to see that each circle touches two sides, and that the two circles touch at the centroid of the rectangle.



Construction. — Make BG = BA; bisect GC in H, and draw HJ parallel to CD. With centre B, draw the arc HL to meet the diagonal BD in L, and make LM = GC. With centre B, draw the arc MN to meet HJ in N, and make HP = HN. Draw PQ parallel to AB, and produce to meet AG in O_1; join O_1K, and produce, making $KO_2 = O_1K$. Then O_1, O_2 are the centres of the required circles. For

$$BG = BA = 8, \quad BL = BH = 9,$$

$$BN = BM = 11,$$

$$HP = HN = \sqrt{(11^2 - 9^2)}, \quad \text{and} \quad QE = PB = 9 - \sqrt{(11^2 - 9^2)}.$$

But

$$QE = 5 - KQ = 4 - SQ = 4 - QO_1.$$

Moreover,

$$KO_1^2 = (1 + QO_1)^2 + QO_1^2 = QE^2 = (4 - QO_1)^2,$$

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whence $QO_1^2 + 10QO_1 = 15$. Therefore

$$QO_1 = 2\sqrt{(10)} - 5 = \sqrt{(11^2 - 9^2)} - 5,$$

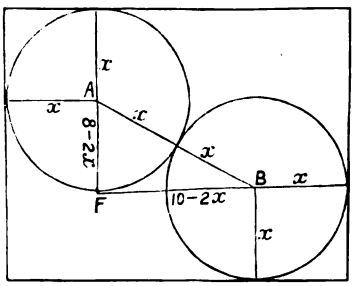
which gives $QE = 4 - QO_1 = 9 - \sqrt{(11^2 - 9^2)}$,

agreeing with the above. Hence, the required diameter

$$= 18 - 2\sqrt{(11^2 - 9^2)} = 18 - 4\sqrt{(10)}.$$

(II.) Let AB be the centres of the discs and let x be their common radius. Then the sides of the right-angled triangle AFB (see figure) are

$$AB = 2x, \quad AF = 8 - 2x,$$
$$BF = 10 - 2x;$$



therefore

$$4x^2 = 4(4-x)^2 + 4(5-x)^2$$

or $$x^2 - 18x + 41 = 0;$$

therefore

$$x = 9 - \sqrt{(40)} = 2{\cdot}676$$

approximately; therefore greatest diameter = 5·35 inches (nearly).

(III.) In order that the two equal circles may be the largest possible, each must touch a pair of the rectangle's adjacent sides; they must also touch one another. They can therefore be found, as proved in Question 15260 (October, 1903), thus—describe a circle passing through the intersection of the diagonals and touching two adjacent sides: this will be one of the required circles. Its radius can be found by the quadratic $(4-r)^2 + (5-r)^2 = r^2$, the half sides of the rectangle being 4 and 5 inches; whence $2r = 18 - 4\sqrt{(10)} = 5{\cdot}3508$ nearly. This common diameter of the two required circles is plainly greater than that of the circles inscribed in either half rectangles; for it is $18 - 2\sqrt{(40)}$, while the diameter of the in-circles is $18 - 2\sqrt{(41)}$.

10582. (R. Knowles, B.A.)—The equation to a conic referred to a tangent and normal as axes being $ax^2 + bxy + cy^2 + gy = 0$, prove that, e being the eccentricity, the equation to its transverse axis is

$$\{4a(a+c) - (2-e^2)(b^2-4ac)\}x + 2b(a+c)y + bg(2-e^2) = 0.$$

Solution by Frances E. Cave *and* L. Isserlis, B.A.

Let the equation referred to the principal axes be

$$\xi^2/a^2 + \eta^2/[a^2(1-e^2)] = 1,$$

and let (ξ_1, η_1) be foot of normal. Then

$$\xi = \xi_1 + \frac{p}{a^2}\left(\frac{x\eta_1}{1-e^2} + y\xi_1\right), \quad \eta = \eta_1 + \frac{p}{a^2}\left(\frac{y\eta_1}{1-e^2} - x\xi_1\right);$$

therefore

$$(1-e^2)\left[\frac{p}{a^2}\left(\frac{x\eta_1}{1-e^2} + y\xi_1\right) + \xi_1\right]^2 + \left[\frac{p}{a^2}\left(\frac{y\eta_1}{1-e^2} - x\xi_1\right) + \eta_1\right]^2 - a^2(1-e^2)$$
$$\equiv \lambda(ax^2 + bxy + cy^2 + gy).$$

Equating coefficients, $\lambda(a+c) = 2-e^2$, $\lambda(b^2-4ac) = 4(e^2-1)$,

$$\lambda a = 1 - \frac{e^2p^2\eta_1^2}{a^4(1-e^2)^2}, \quad \lambda b = -\frac{2e^2p^2\eta_1\xi_1}{a^4(1-e^2)}, \quad \lambda g = \frac{2a^2(1-e^2)}{p};$$

therefore

$$\frac{\xi_1^2p^2}{a^4} = \frac{\lambda a + e^2 - 1}{e^2}.$$

The equation of the transverse axis is

$$0 = \eta = \frac{1}{\xi_1}\left(\xi_1\eta_1 + \frac{p}{a^2}\cdot\frac{y\xi_1\eta_1}{1-e^2} - px\frac{\xi_1^2}{a^2}\right)$$

or $$x[4a(a+c) + (2-e^2)(b^2-4ac)] + 2b(a+c)y + bg(2-e^2) = 0.$$

15581. (C. E. Youngman, M.A.)—If A, B, C, D, E be five points on a rectangular hyperbola, A, B, C, D concyclic, DD′ a diameter of the circle, EE′ of the hyperbola, then the conics ABCD′E and ABCD′E′ will be ellipse and hyperbola, with their axes parallel and proportional.

Solution by W. F. Beard, M.A.

Let CD′, CE, CE′ meet AB at K, L, M. Let p, d be the diameters of the conic ABCD′E parallel to AB, CE; p_1, d_1 those of ABCD′E′ parallel to AB, CE′; P, D, D_1 those of the rectangular hyperbola ABCD parallel to AB, CE, CE′. Since ABCD are on a circle, therefore the diameters of the rectangular hyperbola parallel to AB, CD are equal. But CD′ is perpendicular to CD; therefore AB, CD′ are parallel to conjugate diameters of the rectangular hyperbola; therefore the bisectors of the angle AKC are parallel to the asymptotes of the rectangular hyperbola.

Now, since A, B, D′, C are on a circle, therefore

the bisectors of the angle AKC are parallel to the axes of the conics ABCD′E, ABCD′E′ .....(1).

Again, $MA \cdot MB : ME \cdot MC = p_1^2 : d_1^2 = P^2 : D_1^2$;

therefore $p_1 : d_1 = P : D_1$. Similarly, $p : d = P : D$.

Now CE, CE′, being supplemental chords of the rectangular hyperbola, are parallel conjugate diameters; therefore $D = D_1$; therefore

$$p : d = p_1 : d_1 \quad \text{.....(2).}$$

Also CE, CE′ are equally inclined to either asymptote of the rectangular hyperbola, and therefore to either axis of the conics ABCD′E, ABCD′E′; hence the diameter of the conic ABCD′E′ parallel to CE = d_1. Hence, from (1) and (2), the conics ABCD′E, ABCD′E′ have their axes parallel and the diameters in two separate directions are proportionals; therefore their axes are proportionals.

By considering which of the points K, L, M lie in AB, CD′ or in these lines produced, it will be plain that one of the conics is an ellipse and the other a hyperbola.

QUESTIONS FOR SOLUTION.

15641. (Hon. G. R. Dick.)—Denoting the complete elliptic integral

$$\int_0^1 \frac{dz}{\sqrt{[(1-z^2)(1-k^2z^2)]}}$$

by K(k), prove that

$$K(\cos\tfrac{1}{2}\theta) = \sum_0^\infty \frac{P_n(\cos\theta)}{2n+1}, \quad K(\sin\tfrac{1}{2}\theta) = \sum_0^\infty (-1)^n \frac{P_n(\cos\theta)}{2n+1},$$

where $P_0, P_1, P_2, \ldots, P_n$ are the sphere functions of the first kind (Legendre's functions X_n).

15642. (Professor Nanson.)—In an election each voter marks the candidates in order of preference. For each r-th preference s_r marks are given, and at each scrutiny the candidate with the least number of marks is excluded. If $\frac{1}{2}(s_1 + s_r) \geqslant (s_2 + s_3 + \ldots + s_{r-1})/(r-2)$ and $s_{r-1} > s_r$, show that any candidate with an absolute majority of original first preferences is certain of election.

15643. (H. A. Webb.)—A particle moves in a plane under the influence of two centres of gravitational attractive force of equal intensity μ, situated at the points $(\pm\frac{1}{2}d, 0)$. The particle starts from the point $(d\operatorname{cosec}^2\psi, 0)$ with velocity $4\sqrt{(\mu/d)}[\tan\psi/\sqrt{(1+\sin^2\psi)}]$ in a direction making an angle ψ with the axis of x. Show that the equation of the path described is $\cosh\frac{1}{2}\eta\cosh(1/\sqrt{2})(\xi - i\alpha) = 1$, where

$$x + iy = \tfrac{1}{2}d\cos(\xi + i\eta) \quad \text{and} \quad \cosh\alpha\sin^2\psi = 2,$$

and verify analytically that the path is real.

15644. (W. H. Blythe, M.A.)—If M divides the period of 1/M, or, in other words, if 1/M and $1/M^2$ have the same period, then $M = 2(3^n) + 1$, where n is a positive integer, and a multiple of 5, including zero. Is this the case? It is to be observed that, being true for 3 and 487, it is true also for their product 1461.

15645. (R. Chartres.)—The reciprocals of two consecutive numbers give the same number of recurring figures (n) in the scale radix (r), and the results looked upon as whole numbers are consecutive. Find the numbers and r and n.

15646. (R. W. D. Christie.)—Solve the equation $X^2 - 19Y^2 = -3$ (in integers) by the use of other convergents than the ordinary Pellian, and prove its generality: thus $p_n/q_n = \frac{2}{1}, \frac{5}{1}, \frac{17}{4}, \frac{22}{5}, \frac{61}{14}$ (ad inf.).

15647. (D. Biddle.)—$N = S^2 + A = H^2 - h^2$.—Prove that when N is factorizable it is possible to find integral values to satisfy the following equation:— $6(\lambda^2 - \mu^2) + (\alpha\lambda - \beta\mu) = \frac{1}{24}[N - (\alpha^2 - \beta^2)]$, where $\lambda > \frac{1}{12}S$, whilst α and β are each < 12, being respectively the residues of H and h (mod 12), and can be found from the following formulæ:—

$$H^2 \equiv [\tfrac{1}{2}(N+1)]^2 \pmod{144}, \quad h^2 \equiv [\tfrac{1}{2}(N-1)]^2 \pmod{144}.$$

15648. (C. E. Youngman, M.A.)—The number 666 is apparently the greatest triangular number which has all its figures alike. Is there proof of this?

15649. (A. M. Nesbitt, M.A.)—If $c_r \equiv n!/[r!(n-r)!]$ and if c_a be taken as zero when $a < 0$ or $> n$, prove that the determinant of order $n-1$ the p-th element of whose q-th row is c_{2p-q} is equal to $2^{\frac{1}{2}n(n-1)}$.

15650. (Professor Sanjána, M.A.)—Find the limit of the expression

$$1 - \frac{r^{n+1}}{1-r}\left[1 - \frac{r^{n+2}}{1-r^2}\left\{1 - \frac{r^{n+3}}{1-r^3}\left(1 - \frac{r^{n+4}}{1-r^4} \times \ldots\right)\right\}\right]$$

when the number of brackets is infinite, r being less than unity.

15651. (Professor Langhorne Orchard, M.A., B.Sc.)—Find the sum of n terms of the series $6 + 3 + 2 + \frac{3}{2} + \frac{2}{3} + 1 + \ldots$.

15652. (Professor Nanson.)—A_1, A_2, A_3, A_4 are the vertices of a tetrahedron, and O, O′ are fixed points. If OO′ cuts the face opposite A_r in P_r, and P_r' is the harmonic conjugate of P_r with respect to O, O′, show that the four lines A_rP_r' are generators of a hyperboloid.

15653. (Professor Sanjána, M.A.)—From the moving point (h, k) three normals are drawn to the parabola $y^2 = 4ax$, and a parabola is drawn passing through the feet of these normals and through a fixed point on the given curve. Show how to find the envelope of this parabola, and obtain its equation when (h, k) moves on the circle $x^2 + y^2 = 2ax$.

[Suggested by Mr. Tucker's Question 15490.]

15654. (R. Tucker, M.A.)—Find the envelope of the circle about PQRS in Question 15619.

15655. (Professor Cochez.)—Trouver le lieu des points qui divisent

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en moyenne et extrême raison les cordes d'une ellipse passant par un point fixe.

15656. (James Blaikie, M.A.)—If a straight line drawn through the circum-centre of a triangle ABC meet BC, CA, AB in P, Q, R, and if points P′, Q′, R′ be taken on the line so that O is the mid-point of PP′, QQ′, RR′, prove that AP′, BQ′, CR′ meet at a point in the circum-circle.

15657. (Professor Neuberg.)—Les diagonales AC, BD d'un quadrilatère ABCD se coupent à angle droit en O. On sait que les projections de O sur les côtés du quadrilatère sont situées sur une même circonférence. Si p est la puissance de O par rapport à cette circonférence et R le rayon, démontrer que

$$1/p = 1/(OA \cdot OC) + 1/(OB \cdot OD),$$
$$4R^2/p^2 = (1/OA - 1/OC)^2 + (1/OB - 1/OD)^2.$$

15658. (I. Arnold.)—Describe a circle (1) passing through two given points and such that a given right line shall cut from it a segment containing a given angle; (2) passing through a given point and such that two given right lines shall cut from it segments containing given angles.

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9876. (R. W. D. Christie.)—Prove that

$$2\tan^{-1}(a/b) \pm \tan^{-1}[1/(b^2 + 2ab - a^2)] = \tfrac{1}{4}\pi,$$

where a is the coefficient of x^n and b of x^{n+1} in the expansion of $1/(1 + 2x - x^2)$.

10041. (Professor Emmerich, Ph.D.)—K being the symmedian point of the triangle ABC, we have $AK + BK + CK \equiv (a + b + c)/\sqrt{3}$.

10050. (H. MacColl, B.A.)—Three pairs of random points P_1, P_2; Q_1, Q_2; R_1, R_2 are taken in the circumference of a circle; and three pairs p_1, p_2; q_1, q_2; r_1, r_2 are taken inside the circle. The three straight lines (produced indefinitely) P_1P_2, Q_1Q_2, R_1R_2 will form a triangle of area α, say; and the three p_1p_2, q_1q_2, r_1r_2 will form another of area β, say. Find (1) the chance that the latter triangle will lie wholly within the circle, and (2) the average value of the ratio $\alpha : \beta$.

10872. (Professor Hudson, M.A.)—A paraboloid of revolution floats with the lowest point of its base in the surface of a fluid, and its axis inclined at an angle θ to the horizon. Find its height and specific gravity.

11079. (D. Edwardes, B.A.)—(1) Prove that

$$d^2\phi/dx^2 - d^2\phi/dy^2 - 1/y\, d\phi/dy + k^2\phi = 0$$

is satisfied by $$\phi = \int_0^{2\pi} e^{-y \sin\theta} f(x + y\cos\theta)\, d\theta,$$

and (2) construct the general solution.

11296. (Professor Cavallin, M.A.)—A locomotive engine of mass M has two equal pairs of wheels of radius a, such that the moment of inertia of either pair with its axle about its axis of rotation is A. The engine exerts a couple G on the forward axle. Show that, if both pairs of wheels bite at once when the engine starts, the friction between either of the forward wheels and the line capable of being called into play must not be less than $[G(A + Ma^2)]/[2a(2A + Ma^2)]$. Prove also that, if the only action between an axle and its bearings is a couple varying as the angular velocity of the axle, the final friction called into play between either forward wheel and the line is $G/4a$.

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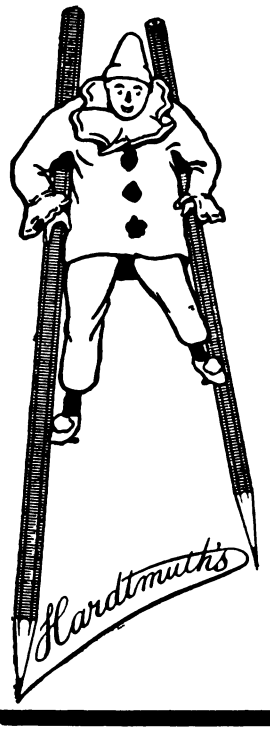

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Co-education.

As far as secondary education is concerned the Act of 1902 is only beginning to work; but there is a stir among the dry bones, and the ordinary citizen is at length realizing the lamentable gap in our national system and the inadequacy of private effort to fill it. All over the country Local Authorities are awakening to their new responsibilities, are studying a problem which is strange to most of them, taking counsel with teachers, and calling in the expert. We are still in the experimental stage, and our Iagos, who are nothing if not critical, can find plenty to carp at in the proceedings of County and Borough Councils—inadequate salaries offered to teachers, illiberal curricula, unfair competition, and interference with vested interests. We are far from holding that all these complaints are groundless, but in our opinion the gain enormously outbalances the loss. It is worth running some risks and making many mistakes if thereby we ensure a general interest in education and arouse in each city or area a local pride in its schools and colleges.

This new departure brings to the front a number of educational questions which have been discussed more or less in professional journals and debated at conferences of teachers, but on which there is no consensus of opinion, even among teachers, and which the County Councillor has probably never thought of: the relation of the Central to the Local Authority, the correlation of primary and secondary education, the curriculum of the lower-grade and higher-grade secondary school, the recognition of private schools as an integral part of the educational supply, the tests to be applied as to the efficiency of schools—by inspection, examination, or a combination of both—the training of teachers, and co-education. Some of these questions *solvuntur ambulando*, and on none could the most enlightened and confident of educationists pretend to give a categorical answer that would solve all the difficulties which the County Councillor has to face. Yet there are some guiding principles on which we can confidently insist, some popular fallacies that we can expose, some alternatives we may suggest, either of them commendable, and the choice between which must depend on circumstances.

One or two of these burning questions we have already discussed, and to others we hope to revert. This month we have chosen for our topic the last, and, in order to furnish the data and clear the ground, without any pretence of solving a most complex problem, we put forward a few preliminary observations on co-education.

In England the word itself is a neologism, and till recent years the thing has been unknown, except in the kindergarten and a few primitive rural schools. What is the exception in England is in Scotland the rule, and across the border the vast majority of boys and girls have for generations been taught together till they reached the University; though at the latest stage, it is curious to remark, Scotland was, till very recently, more exclusively conservative than England.

It is well worth our while to examine how this national difference arose. If we trace back its history, we shall find that it originated not in any theory of the equal rights of women or the ideal relations of the sexes, but simply from the force of circumstances. The originators of co-education, had they been put upon their defence, would have pleaded like Dido: "Rerum novitas nos talia cogit moliri"—Our poverty must excuse and justify what is confessedly a makeshift. But it may be doubted whether it occurred to them that there was anything that called for explanation.

In the Scotch Act of 1696 "for settling of schools"—the Act which consummated and perpetuated John Knox's famous scheme—it was ordained that there should be a school settled and established and a schoolmaster appointed in every parish; and means were provided for enforcing this duty on heritors. The Act made no mention of sex; but, on the one hand, it was obviously impossible in a poor country like Scotland to provide two schools for each rural parish, or even a dual school with a master and a mistress teaching under one roof; and, on the other hand, even in those rude times and rude climes, it was felt to be too monstrous to exclude the lassies from all possibility of learning. "Cessante causa, non cessit effectus"; and, to the present day, except in the large towns, joint schools are the rule in Scotland, and, what is more important, there is no sign of dissent, not even a "Wee Church" that would establish separate schools.

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Wales is a still more instructive object lesson; for there the system of secondary education is not an historical survival, but has grown up beneath our eyes. As a rough generalization, it may be stated that in South Wales all the intermediate schools are mixed; while in North Wales, which is more open to English influences, both systems flourish side by side, and the compromise of the dual school is common.

If we look beyond Great Britain, we may state roughly that in America co-education is the universal rule, while on the Continent it is unknown.

But in America there are signs that a reaction is setting in. The leading authorities, as may be seen in the report of the Mosely Commission, speak doubtfully; and the President of Clark University, in the cyclopædic work that he has just published on "Adolescence," after summing up dispassionately the arguments for and against, pronounces himself, mainly on psychological grounds, a decided opponent.

Such in brief is the present conflict of theory and practice, and it might seem hopeless to search for the *filum labyrinthi*—the clue to guide our bewildered County Councillor. And yet we think it is possible to discover, amidst the dust of battle and the smoke of controversy, some glimmer of light. First, it is clear that there can be no universal rule. What is good for the country is not good for the town; what is good for one country cannot be imposed on another under different social conditions. Secondly, the fear of moral contamination may be dismissed as a bugbear. On this point, as is shown in the volume of essays edited by Miss Woods, there is a consensus of opinion. Thirdly, it will hardly be disputed that a mixed school of a hundred will be not only cheaper, but more efficient, than two separate schools of fifty each; and in schools where the leaving age is sixteen the physiological and psychological objections urged by Dr. Stanley Hall and others are mostly irrelevant.

So far we are on safe ground, and here we must end. To pursue the inquiry further would involve such debatable problems as, to instance only one, whether the trend of civilization is to assimilate or further differentiate the sexes. Such questions we must leave "on the knees of the gods."

NOTES.

Educationists up and down the country should ponder the elaborate and outspoken "Report on Secondary Education in Liverpool, including the Training of Teachers for Public Elementary Schools," by Prof. Sadler, which has just been issued by the Liverpool Education Committee (2s. 6d. net, Eyre & Spottiswoode). It is really a critical survey of the educational system of Liverpool as a whole, with reference to the civic life and commercial interests of the city. Dr. Sadler cannot disguise "the grave concern" with which he regards much of the present secondary education there, especially the secondary education of boys. The defects of the system "are very serious"; they seem "to threaten some of the vital interests of the city." Dr. Sadler's "Suggestions and Recommendations," under a dozen heads, run to forty-five pages of the report; and reasonably prompt and whole-hearted action upon them would certainly inaugurate a new era and a profitable one. We are glad to observe that he considers it "desirable that the Education Committee should take steps to encourage and recognize efficiency in the private schools," which teach about one in three of the Liverpool secondary pupils; and he indicates lines on which the Committee might proceed. The like advice applies everywhere. The Municipal School of Art, the School of Commerce, the teaching of Domestic Science, the Central Technical School, the Evening Continuation Schools and Technical Classes—all these come within the review. The report is comprehensive, incisive, and instructive far beyond the limits of Liverpool. Dr. Sadler makes suitable acknowledgment of the help of assistants and especially of the co-operation of Mr. J. L. Holland.

An official "Addendum to Statutory Rules and Orders, 1903—No. 384 (as amended to March 1, 1904)," records the Board of Education's approval of "the Regulations framed by the Consultative Committee on February 25, 1904, modifying and altering the Regulations for the formation and keeping of the Register of Teachers." This looks like ancient history, and the document is dated "18th April, 1904"—a date sufficiently alarming, now that by the calendar we are, at the date of writing, pretty near the end of October. At first we fancied we must have overlooked the announcement, but we were reassured by the printer's date, which we read as September. If this be so, then really what can be the meaning of such slackness in the administration?

Lord Londonderry is not lacking in hopefulness. He claimed, at Ashton-under-Lyne (October 15) that the opportunities for education had been greatly increased by the Act of 1902—justly, we think; but his anticipations of the gradual disappearance of differences and of the rise of a common ideal of promoting education apart from political and religious views seem dependent upon a very large "if," especially in Wales. No doubt, too, there is a wider agreement as to the higher education, though it is somewhat rotund to affirm that "the whole question of higher education rests entirely with the people." Everything in a sense rests entirely with the people, and yet somehow officialdom manages to have a good deal to say in most things—not always to the same effect as the people appear to wish. It is all very well to have "a popularly elected man" to "decide your children's curriculum," but there is something in the conditions of electing and in the conditions of deciding. The statutory limits of the financial element of the problem are not without their influence; and a strong lead from the Government might supply very much needed suggestion and guidance to the local administrators. Has the Government, indeed, any comprehensive scheme for the adjustment of the higher education at all? Is there any home problem really more pressing for solution?

Addressing a conference of managers and teachers organized by the Berkshire County Association of Teachers (October 15), Dr. Macnamara frankly admitted the advantages of placing the voluntary schools on a more satisfactory

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footing, and offered a suggestion for the settlement of the disturbing differences. "He believed the solution of the education trouble would lie in the disappearance of the dual system, the putting of all schools under full public control, and the granting of some sort of facilities for specific denominational teaching by volunteers wherever practicable." A permanent settlement, however, "would have to be a settlement by agreement." A striking example had just been shown a few days previously by the Education Committee of the Hertfordshire County Council, who adopted, amid general satisfaction, a syllabus drawn up by Dr. Fry and Principal Whitehouse. If every Education Committee had a similarly capable and sensible couple of conciliators, Lord Londonderry's hopefulness might soon find a very agreeable justification. We print the substance of the syllabus elsewhere, and trust it will receive the wide and earnest attention it deserves. As to the machinery of local education, Dr. Macnamara is reported to have spoken in very pessimistic terms:

> Already the municipal Councils were breaking down under the enormous strain thrown upon them. In London there was absolute chaos, and everywhere the work of administering education was falling into the hands of a few leisured doctrinaires, flanked by a powerful army of paid officials.

One must hope that there is some exaggeration here; but undoubtedly there is reason for insistent warning, as shown by recent reports of the proceedings of the London County Council.

While there is a general outcry of dearth of teachers, Alderman D. P. Williams (in the *Welsh Leader*) has been making an interesting inquiry into the history of the pupils in certain schools and of certain students in one college in Wales, and concludes that "the percentage adopting the teaching profession is dangerously large, or, at any rate, it is doubtful whether such a number will at any future time find a place for themselves in the scholastic profession." This just shows how important it is to have a comprehensive knowledge of the facts. Mr. Williams's inquiry has necessarily been on a limited scale: the ten county schools of Carnarvonshire and the University College, Bangor—1,423 pupils of the schools, and 947 students of the college, of whom 251 and 509 respectively have gone into the teaching profession. The period over which the figures extend is unfortunately not stated, so that it is difficult to say how far England may hope to draw supplies of redundant teachers from Welsh institutions. The inquiry is suggestive indeed, but the narrow basis—even admitting that it may be fairly typical of Wales—forbids any very definite general deductions. "What use have the pupils made of their educational advantages, and what are the vocations in life to which they appear to be specially attracted, and for which their school or college training would appear to have specially equipped them?" Yes, it would be instructive to follow out the investigation; but the discrimination of extra-academical influences would be a task of very great difficulty.

The pictorial postcard appears to have received a somewhat notable educational development down in Surrey. The Surrey Education Committee is reported to have ordered a round million of pictorial postcards representing places of historic interest in the county, with the view of encouraging "more regular and punctual attendance" of the school-children. And not only postcards, but also "a large quantity"—how many tons in the first order not specified—"of bronze and bronze-gilt medals for the same purpose." It is not for us to interfere between this enterprising Committee and their constituents, but it does seem odd that, if the educational enthusiasm of the county is so keen as to urge or to endorse the expenditure of hundreds of pounds in this fashion, its common sense is not equal to the task of securing regular and punctual attendance by some more direct and healthy process. Suppose all the other counties follow the Surrey example, and then calculate the comparative results of applying the money to fundamental educational work instead: the conclusion will be rather startling to those that have some notion of where the most clamant needs of our educational system abound. Are we really to believe that Surrey teachers cannot make school work attractive, or that Surrey parents are so feeble of will as not to enforce a simple duty with simple directness? Some of us have reminiscences of the occasional operation of certain longish strips of leather—firm, flexible, and efficiently moral—not so evanescent as postcards, nor yet so expensive.

"The education of our youth in the science of government: in a republic what species of knowledge can be equally important?" asked George Washington. The same question has not a little relevance here. The subject, however, is branded "A Neglected Problem of Education" by Mr. S. E. Forman, of Washington, in the October issue of *Education*. The Report of the National Commissioner of Education for 1901 gives figures that "show that instruction in civics the country over is steadily declining." Why is this? "Because the task has not been approached in the right way." Well, what is the right way? To make the lesson a lesson in ethics—not a merely intellectual survey of constitutions and political organizations. The training should have three salient features: (1) moral excellence a prime qualification of the teacher; (2) the spirit of institutions to be imparted, not merely the political anatomy; and (3) political problems of pressing interest to be discussed. Partisanship? "A teacher who is at all fit to be entrusted with the task of training for citizenship will have little trouble in avoiding partisanship, and, if he avoids that, the greatest danger will be passed." The ideal is perfectly feasible, no doubt; the difficulty lies in the level-headedness of the teacher, quite as much as in his "moral excellence," unless moral excellence include strong common sense. The teaching of history, too, suggests a very similar line of remark.

Elsewhere we summarize a very strong pronouncement of Mr. Dillon's on education in Ireland. Ireland, according to Mr. Wyndham, is "an educational jungle," and, if so, it is for Irishmen themselves to take an active hand in clearing the jungle. Very likely, we should think, Mr. Dillon's interpretation of the proceedings of the Government is coloured by suspicions that have little or no basis in fact;

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but the points can be brought out in the vigorous discussion he promises. Meantime we simply remark that the *National Teacher* supports Mr. Dillon's contentions through thick and thin. "What we are proud of," it says (October 21), "is this—that a member of Parliament of Mr. Dillon's experience and standing should have realized all this at a crucial period in the history of primary education in Ireland, because we believe, once he has grasped the state of affairs, he will allow no opportunity to slip until the injustice that is being perpetrated both on the teachers and on the schools is sifted to the very bottom." The particular point referred to is Mr. Dillon's statement that "up to this moment not one penny of the Equivalent Grant has been expended on the primary schools." The self-denying ordinance of the teachers—who had their miserable salaries improved by former grants, but "stated publicly that they would be satisfied if the grant were devoted to the upkeep of the schools"—deserves generous and prompt recognition. As our contemporary says, "their remuneration at present is most inadequate, and we hope something will be done to improve them." Can it be the fact, as stated by Mr. John Nealon, the President of the Teachers' Organization, "that a teacher broken down in health after twenty-six years' service has to retire on the munificent pension of £3. 19s. 8d."?

SUMMARY OF THE MONTH.

THE Calendar of University College, London, for the session 1904–5 gives full particulars of several interesting new developments. The university courses of study, especially those in economics, have been extended, and further arrangements have been made for post-graduate courses, lectures, and research—explained fully in ten pages of the Calendar. The list of papers and other publications proceeding from the different departments of the college during the past year runs to eight full pages, and shows that the work now being accomplished in the college is as good both in quantity and in quality as in any previous year.

THE London School of Economics and Political Science—the oldest University school of administration and commerce in this country—has opened its tenth session with still fuller means of usefulness. The new Calendar shows the work grouped in twelve large divisions. The course for B.Sc. (Econ.) has been completed by the addition of a third year of study. The duplication of the classes for day and evening students has also been completed. Further progress has been made with the organization of the department of graduate study and research. Committees have been formed to advise on Insurance and Transport subjects, and the prospectuses on the classes will be ready presently.

THE London-Oxford-Cambridge scheme for mutual recognition of examinations is now practically settled. After conference between representatives of the three universities, a scheme was drawn up whereby (1) the University of Oxford would recognize the Cambridge Senior Local Examination and the London Matriculation Examination as affording exemption, under certain conditions, from Oxford Responsions: (2) the University of Cambridge would recognize Oxford Responsions, the Oxford Senior Local Examination, and the London Matriculation Examination as affording exemption, under certain conditions, from the Cambridge Previous Examination; and (3) the University of London would recognize Oxford Responsions, the Cambridge Previous Examination, the Oxford and Cambridge Joint Board Higher Certificate Examination, the Oxford Senior Local Examination, and the Cambridge Senior Local Examination as affording exemption, under certain conditions, from the London Matriculation Examination. (Already, under certain conditions, the Oxford and Cambridge Joint Board Higher Certificate Examination affords exemption from Responsions and from the Previous Examination, the Oxford Senior Local Examination from Responsions, and the Cambridge Senior Local Examination and the Higher-Grade Certificate Examination of the Scotch Education Department from the Previous Examination; also the Previous Examination is recognized by the University of Oxford as affording exemption from Responsions.) It is proposed that on the adoption of the scheme by the three universities a Standing Committee, consisting of representatives of the Hebdomadal Council of the University of Oxford, the Council of the Senate of the University of Cambridge, and the Senate of the University of London, should be appointed to consider any points of difficulty that might arise. Any substantial changes made in any of the examinations referred to would be considered by the Standing Committee, and, if necessary, proposals for changes in the conditions of exemption would be made to the universities. It is further proposed that the Committee should, if they think it desirable, take such steps as may enable them to inspect papers of questions and the answers of candidates.

AT a meeting of teachers in the London polytechnics, technical institutes, and schools of art (October 22) there was formed "an Association of Science, Technological, and Art Teachers engaged in the London Polytechnics, Technical Institutes, and Schools of Art, such Association to comprise both permanent staff and evening teachers, other than those engaged in purely secondary work. The main objects of the Association are: (1) the advancement of technical education generally; (2) the interchange of ideas regarding methods of technical teaching; (3) the promotion and safeguarding of professional interests of technical teachers in such matters as (*a*) tenure, (*b*) pensions, (*c*) salaries, (*d*) registration of teachers, (*e*) training and qualification of teachers, (*f*) schemes of examination and inspection; (4) to lay the views of technical teachers before the various Educational Authorities and the public; (5) to enable technical teachers to co-operate as a body with other educational or scientific associations when desirable. The Association, it is hoped, will eventually embrace the teachers in similar spheres of work throughout the country.

THE Thirty-second Annual Meeting of the London Teachers' Association was held at the Memorial Hall, Farringdon Street (October 22). Of 12,730 teachers, no fewer than 10,730 are members of the Association, the increase during the past year being nearly 1,500. The new President, Mr. W. A. Nicholls, of the Eglinton Road Council School, Plumstead, said the London County Council possessed a unique opportunity for inaugurating and administering a comprehensive scheme of education for the whole of the metropolis. No one doubted that the Council took a broad and sympathetic view of the moral and material needs of London. The policy of a progressive body democratically elected must be the child first, the future citizen. The teacher came next, because he was essential to the child's education, and then came, if anywhere, the denominational interest. The next question the Council would have to apply themselves to was that of staffing the schools. There were now 355 vacant places in the ordinary staffs. They were assured the London County Council would do its best to place the educational ladder within the reach of every child, whether in provided or non-provided schools. They longed for the day when that distinction would cease to exist, and when, as a consequence, the application of religious tests to teachers should perish with it.

THE first general meeting of the Association of Education Committees was held at the Holborn Restaurant on October 6–7, Mr. J. Tudor Walters (Leicester), President, in the chair. Mr. Walters, in a long presidential address, dealt on broad lines with the duties and responsibilities placed upon Education Committees throughout the country. The mental, moral, and physical development of the future citizens of England and Wales (he said) had been very largely committed to their charge, and it should be their aim to render education attractive, to breathe a broad spirit into their work, and to look at it from a standpoint that should mean a higher ideal and a nobler standard of educational work in the time that was to come. The members of the Association were, primarily, neither politicians nor theologians; they were educationists, whose policy and programme was to do the best they could to put into the reach of the children the best possible education that could be afforded to them.

AT the Church Congress at Liverpool (October 5), much attention was naturally given to the religious difficulty. The Rev. Canon Brooke (Kennington) reviewed the working of the

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Act of 1902 in primary education, and the Bishop of St. Asaph, the Rev. Prof. Masterton (Birmingham), the Rev. Dr. James (Rugby), and the Rev. J. B. Lancelot (Liverpool College) dealt with religious education from different points of view. Sir H. Hibbert read a vigorous paper on "Secondary Education," emphasizing the necessity for rearrangements to obviate waste of money, for thoroughness in the teaching of modern languages, for due co-ordination of schools, and for the training of teachers.

A CONFERENCE for the promotion of the higher education of working men was held at the University of Manchester (October 8). Principal Hopkinson presided, and there was a large gathering representing the Universities of Manchester, Liverpool, and Leeds, several co-operative associations and trades councils, the Manchester Ruskin Hall Committee, the National Union of Teachers, the National Conference of Friendly Societies, and the Women's Guild. The meeting was called under the auspices of "An association to promote the higher education of working men" formed about twelve months ago, which seeks to forward its objects by the extension of University teaching and by (1) the development of an efficient school continuation system, and (2) the assistance of working-class efforts of a specifically educational character. The year's experience has convinced the promoters "that the association can do much to assist the development of education in England." They have called the attention of co-operators and trade unionists to the importance of higher education for the workers at many conferences and meetings, and they have kept the matter before the public through the press. They have enabled the University Extensionists and the workers to understand each other better; and they have promoted a better understanding of the work of the National Home-Reading Union, which, during the past year, has entered into alliance with the University Extension authorities. The following resolution, moved by Mr. W. Neild, President of the North-West Co-operative Educational Committees' Association (Oldham), and seconded by Mr. John Harker, President of the Manchester and Salford Trades Council, was passed:—

That the higher education of workpeople in the North-West of England will be best furthered by joint action on the part of the universities and working-class organizations; and that a Committee, consisting of representatives from the following bodies, with power to add to its number, be convened by the Association to promote the higher education of working men, and charged with the duty of making recommendations to a conference to be called hereafter:—The Universities of Manchester, Liverpool, Leeds, Oxford, and Cambridge, the North-Western Section of the Co-operative Union, the North-Western Co-operative Educational Committees Association, the Trades Councils of Manchester, Liverpool, and Leeds, the Manchester Ruskin Hall Committee, the National Union of Teachers, the National Conference of Friendly Societies, and the Women's Guild.

Mr. Neild said there was a deep and seething feeling among artisans of the desirableness of their being brought into closer touch with university teaching. He pointed out that at Oldham alone they had over one thousand students seeking technical instruction. Principal Dale, of Liverpool, also spoke, and Archdeacon Wilson urged the need of compulsory evening schools.

THE Education Committee of the Hertfordshire County Council has amicably settled a religious difficulty which has caused considerable friction between Churchmen and Nonconformists—the kind of religious teaching which should be given in the County Council schools. Some months ago, the Rev. Dr. T. C. Fry, Head Master of Great Berkhampstead School (a Churchman), and Prof. Owen Whitehouse, Principal of Cheshunt College (Nonconformist), were appointed a sub-committee to arrange a syllabus of instruction, together with prayers and hymns, and after considerable labour they drew up a careful syllabus setting forth a list of lessons for each standard. The following recommendations were embodied in the report:—

(1) The Bible shall be read, and such explanation and instruction in Christianity and morality given therefrom as are suited to the capacity of the children. (2) Any part of the Bible may be learnt by heart, in addition to the portions prescribed. (3) The lessons are to be as practical as possible, and especial pains should be taken by the teacher when teaching the Old Testament to show where by the teaching of Christianity we have in any case outgrown primitive religious views, and pictures should be used. (4) Working lists of lessons based upon the syllabus should be drawn up at the beginning of the school year by the head teacher of each school and submitted to the inspector of the County Council at the time of religious inspection.

The utmost simplicity in the teaching of little children was enjoined, such as the learning of the Lord's Prayer and Psalm xxiii., simple stories from Genesis, and the chief facts in the life of our Lord. A course of instruction was also mapped out for use in pupil-teachers' schools, and use of the recent results in archæology was recommended. Over a dozen prayers have been compiled for teachers to select from, and the hymns, from all sources, have been divided into two classes—for children and for infants.

THE Assistant Masters' Association *Circular* for October expresses in handsome and well deserved terms its congratulations to Mr. J. L. Holland on his appointment as Secretary for Education to the County Council of Northamptonshire:

The A.M.A. has had no more loyal and capable servant. For about ten years past he has sat on the Executive Committee. As a member of the Incorporation Committee he knew the ardours of those laborious days—and nights. He was Chairman of the Association in 1902, and in the *interregnum* between the rule of Mr. Rouse and of Mr. Mackness he did most of the duties of Secretary as well. In the same year he was appointed to the Registration Council, and became Vice-President of the Education Section of the British Association. For the last eight months Mr. Holland has been working with Prof. Sadler, assisting in the production of a series of valuable reports on the state of secondary education in counties and boroughs, and drawing up schemes for its better organization. His great powers of work, his mastery of detail, his grasp of essentials, his command of nervous and persuasive speech, his business talent, and a temper admirable alike in its force and its moderation, mark Mr. Holland as a man likely to be of service to the community as he has been to the A.M.A.

MR. P. A. BARNETT, Superintendent of Education in Natal, is returning to England presently. The following letter, handsomely engrossed and encased (Natal arms engraved in solid gold), has been addressed to him by the Natal Minister of Education:—

On the eve of your departure from Natal, the Government desires to express its regret that you have decided to relinquish your appointment upon the termination of the period for which you were seconded by the English Education Department for service in this colony.

Owing to your untiring efforts, the past two years have witnessed a great improvement in the educational condition of the colony. Your unique experience, conspicuous ability, and sound judgment, together with your profound knowledge of mankind, have enabled you to most successfully overcome the many difficulties incidental to the work of a reformer.

In the name of the Government, I have to express its deep appreciation of your work, and to wish you and Mrs. Barnett many years of health, happiness, and prosperity.

AT the annual presentation of prizes and certificates for the London Centre Examinations of Trinity College, London, Mr. A. W. Sebastian Hoare, Secretary for the Local Committee, said that 273 candidates were examined in Musical Knowledge in the year 1903–04, as against 223 in the previous year, and 68 Honours and 156 pass certificates were awarded. For practical examinations there were 1,036 entries—203 Seniors, 256 Intermediate, 301 Juniors, and 276 for the Preparatory Grade. The examiners awarded 877 certificates, 119 being for Honours. The total was 1,309 entries, as compared with 1,261 in the previous year. The Chairman (Rev. H. R. Wakefield, Mayor of Marylebone) congratulated the students upon the technical skill which the examinations disclosed, but reminded them that it was not merely for the acquisition of a certain facility in their art that they studied. In every singer and musician there should be an inspiration, a soul in harmony with human thoughts and aspirations. Dr. Turpin, the Warden of the College, spoke of the musical memories associated with that part of London, and mentioned that on part of the site of Trinity College Chopin once lived, and to that house Thackeray invited several of his literary friends to meet the composer and hear his latest compositions. In their progress as musical artists, students were called upon to do much for themselves. They must develop their sense of hearing. This was a strong point with Sir A. Sullivan, who said that sufficient attention was not given to details. In modern work, however complex, students should try to detect the difference of intervals and the different harmonic combinations.

PROF. FINDLAY writes suggestively in the *Morning Post* (October 14) on the most effective lines of "Research in Education." As to the difficulties to be overcome:

One obvious difficulty lies in the vast extent of the ground to be

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covered. Setting aside the fundamental ethical inquiries involved in the purpose of national education, there are three principal fields, lying somewhat apart, each of which by itself could fairly demand the attention of a section [of the British Association]. First, there is the external task of the organizer and administrator, requiring a training and an equipment analogous to that of the student of political science; secondly, there is the internal work of professional practice; and, thirdly, there is the field of inquiry into child life, an example of which is being offered at this moment in the three years' programme of study published by the Extension Committee of the London University. This last field is one which will lend itself most readily to the scientific methods pursued in other sections of the Association, and the attention which is now being given to problems of hygiene and school equipment by medical men should be of service in the same direction.

But inquiry into methods of professional practice stands on an entirely different footing. An experiment, say, in modern language teaching requires to be conducted for at least two years; and, to be really effective, it should be carried on for four years before a scientific estimate of results can be reported. A group of scholars must receive continuous instruction under the specified conditions by the same group of teachers, and the results of the instruction must be regularly recorded and judged by independent authorities. These conditions are, obviously, very difficult to secure, and we have few examples in this country or abroad of any work which can be described as scientific in this sense.

A SUMMARY of the points is conveniently provided by Prof. Findlay himself:

(1) The recognition of education as a great national interest, apart from class distinctions or religious movements, carries with it the inevitable demand that the subject shall be handled on modern methods of scientific research. This research in the first instance concerns the teaching profession and the institutions where the teacher is trained, but it concerns also the nation at large, since so large a part of the community is interested not only as parents of children, but as taking a share in the control of schools.

(2) The British Association has responded to this demand for investigation, but since the subject is a theme of wide and popular interest there is a danger that the mode of handling it may degenerate below the high level of production demanded in other sections of that gathering.

(3) This danger is especially to be feared because so little work of a genuinely scientific character is being produced in this field; the conditions are onerous, and in what is perhaps the most important department (that of teaching) real scientific achievement is at present seldom to be expected.

(4) By way of clearing the ground, it seems important that a sharp division should be maintained between fields of inquiry which need to be approached from different standpoints and handled with different tools. In this matter a useful precedent may be sought in the organization of the National Education Association of the United States.

THE *Morning Post* concludes an article of comment on Prof. Findlay's contentions thus:

The first and most earnestly needed research is one that needs no scientific department. For the Board of Education, having laid down the conditions on which alone in future a young man or woman may be registered as a teacher, ought now to report what is the average pay of that profession, what the average number of hours' work a week, and what the prospects of an income on which to raise a family and of a pension on which to retire. It is not a question of making a schoolmaster's life worth living—a worker's life is always worth living to a man who loves his work—but it is a question of whether or not, as things are at present and in the long run, he can live at all. Unless the Board of Education can raise the pay of the teachers—at any rate, in secondary schools—the national system of education will collapse for want of the men to work it.

THE Cornwall County Education Authority, in a circular just issued to the District Committees, states that the growing scarcity of assistant teachers and the great difficulty of maintaining the teaching strength of the county at the proper level, are causing the County Authority the gravest anxiety. It seemed difficult to devise any means for grappling with the problems. The Educational Authorities could not go on indefinitely raising salaries in an undignified competition for the scanty supply of teachers which the county afforded at present, and for the immediate future the outlook was positively disquieting. The District Committees were asked to encourage promising children to adopt the teaching profession.

THE Duchess of Sutherland's Technical School at Golspie has just been opened with the first twenty-five bursars selected, and keen expectation has been excited for improvement of art and industry in the Highlands. The Duchess wisely consulted a variety of practical authorities, and indefatigably raised the necesssary funds. The Duke gave a free site, land for experimental plots, and £8,000 to the building fund, Dr. Carnegie £5,000 for buildings, and Lord Strathcona £1,000 for equipment. Bursaries of the annual value of £30 each have been guaranteed by the Duke and Duchess of Sutherland, the Duke of Portland, the Duke of Westminster, Mrs. Carnegie, Mr. James Coats (Paisley), some Highland County Councils, Highland Associations, and others interested in the North. We learn nothing about the teachers, or about the particular cast of the teaching, but we dare say that has all been satisfactorily arranged.

MR. JOHN DILLON told a meeting at Ballaghadereen, Mayo (October 8), that there were two reasons why the equivalent grant had not gone to the schools of Ireland. One was the new system of finance which had been cautiously and carefully introduced into Parliament, whereby all the savings in Irish administration went into a common pool called the development grant, with the result (to use an American expression) that whoever had the greatest pull got the first call. The second reason was that there had been going on behind the scenes for the last few years a deep-laid plot to revolutionize in an anti-national and anti-Catholic spirit the whole system of education in Ireland. On April 18 last Mr. Wyndham, in a debate in Parliament, clearly revealed the open and avowed policy of the Government to be to take the schools from the control of the Roman Catholic priests, and to turn them into a department of the British Government in this country. The argument used was that because the system of popular control —which was really not popular control, but in the hands of a Department—had been accepted by the bishops and priests of Ireland, and by the public of Ireland, in regard to technical instruction, it should be accepted in regard to primary instruction. There had also been built up in Dublin a plan for defeating the demand for a national university, which seemed to him the greatest danger they had to face. The College of Science, until recently an unknown institution in Stephen's Green, largely attended by English students, and with an attendance from Ireland of thirty or forty, had been taken up by Sir Horace Plunkett, who had obtained a grant of nearly £200,000, and was now constructing a place in Dublin of enormous proportions and equipped in the most magnificent style. It was not going to be a College of Science, but a great scientific university. In what respect did this new scientific university of Dublin differ from the Queen's Colleges from the point of view of nationality and religion? It was much worse than the Queen's Colleges. It was far and away more godless; it was staffed mainly by Protestants, and largely by English and Scotch Protestants, and religion had no place at all within its walls. If that was to be the great scientific university of Ireland, where was the room for that great centre of national thought and culture, which, if it were genuinely national, must be Roman Catholic, because the nation was Roman Catholic? In two or three years this would be used as a formidable answer in Parliament to the demand for a Roman Catholic University. He recommended the bishops and laity to adopt a fighting policy, and warmly support the National Party.

WILLIAM OF WYKEHAM, who died five hundred years ago on September 27, is remembered (says the *Speaker*) with more piety and gratitude perhaps than any other great man in our history—not because he was a great architect and statesman, but because he founded two colleges, the members of which, whatever the reason may be, are prouder of being Wykehamists than of any other distinction they may be born with or acquire. To the rest of the world Wykeham is a mere name, like that of any other great mediæval ecclesiastic or founder of colleges. To the Wykehamist he is the greatest man in history, the all-father, the inspired and only begetter of the most venerable and eternal institution in England. It is easy for those who are not Wykehamists to laugh at this cult, but it is not a small thing to have founded colleges which, for five hundred years, have preserved so intense a piety for their founder, and which remain a link between the mind of the Middle Ages and the mind of the modern world. Winchester and New College were the first real colleges in England. The Oxford colleges founded before them were mere inns, as it were, in which students lodged. The first students at Winchester and New College were Wykehamists, members of a great independent community, with its own laws and character, and that character has endured with extraordinary

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permanence. Wykeham, in fact, was the real founder of the English public school and the English university as they are now.

A NEW technical university was opened at Danzig with great ceremony by the Kaiser (October 6). His Majesty made a long speech emphasizing the value of technical education and the fact that "the unexpected development of German technics in all directions since the beginning of the era of railways we owe not to chance discoveries and fortunate ideas, but to serious work and to systematic teaching based on the firm foundation of science given in our universities. The new university has been built by the State at a cost of £350,000 on land presented by the city of Danzig. It will have six Faculties—Architecture, Building Engineering and Machine Engineering, Chemistry, General Science, and Shipbuilding.

THE old boys of Merchant Taylors' will hear with regret of the death of Mr. Frederick Vialls, for forty years mathematical master, in his seventy-fourth year. Mr. Vialls was much more than a mathematician: he achieved reputation in art and in music. As a violinist he took part in the first Handel Festival, and as a water-colour artist he won the gold medal at the exhibition at South Kensington in 1874 with a drawing of Beachy Head.

THE Alexandria correspondent of the *Westminster Gazette* reports that an ancient mosque in that city has been acquired by a wealthy Mussulman merchant, who intends to transform the building into a Mohammedan University on the model of the University of Al-Azhar in Cairo. Alexandria would thus resume to some degree its place among the seats of learning in the world, in which two thousand years ago it stood pre-eminent.

UNIVERSITIES AND COLLEGES.

(*From our own Correspondent.*)

Oxford.

THOUGH the term is only (at the moment of writing) a week old, and therefore university business has not really begun to trouble, yet there are always points of interest connected with the beginning of a new academic year, and this year the advent of the Rhodes Scholar has added one more.

In the first place, as in duty bound, we must record the admission of Dr. Merry, of Lincoln, as Vice-Chancellor. In physique and voice he makes a remarkable contrast to the outgoing Vice, Dr. Monro, who, however, though he came from Oriel (a college to which Mr. Cecil Rhodes did not attribute much business knowledge), has shown that he possesses very respectable administrative faculties. He had the rare reward of being made a D.C.L. at the hands of his own Chancellor and in the company of a gathering of really remarkable men. There was a fear that Dr. Merry's acceptance of the office of Vice-Chancellor would entail his resignation of that of Public Orator, a position for which he is so peculiarly well fitted. But we have escaped from this misfortune, and a Deputy Orator is to fill Dr. Merry's place until the termination of his term of office.

The mention of the Vice-Chancellor necessarily leads us to deplore the illness of a recent holder of the dignity, the President of Corpus. He had a serious attack of illness at the beginning of the term. Although the latest bulletins show that he has rallied somewhat, yet there is no doubt that he is in a very critical condition.

The freshmen this year number 810, if the published details are accurate. New College comes first with 59, then Christ Church 56, Keble 54, and Magdalen 49. If we omit "the halls," Corpus has the smallest entry, *i.e.*, 18. Among the freshmen are over seventy Rhodes Scholars, distributed, more or less unevenly, among the various colleges, though none appear in the published lists of Corpus or Jesus. Worcester apparently holds the record with seven.

There seems, if we may judge from the article by Mr. Parkin in the *Times*, to have been some doubt in the United States whether the scholars sent should correspond in age to the ordinary freshmen of home growth or whether the conditions of Mr. Rhodes's bequest and scheme would be best met by sending men of rather more mature years. The second alternative has been adopted, and there is no doubt that the Rhodes scholars are somewhat senior freshmen. We fail to see that this is a disadvantage; and, further, we are inclined to hold that the British parent, in the desire to get his son started in life, is now rather apt to send him up a year too early. So far as we can judge, Oxford has taken the invasion good-humouredly, and, indeed, pronounces it a success. This is perhaps not surprising when we consider that the scholars have been selected on other grounds than "mere scholarship"; indeed, we read in a recent number of the journal published at Yale considerable criticism on the elementary nature of the examination required of the candidates. Yet even then there were those who failed! As a matter of fact, the standard was approximately that required for "Smalls," and, if we bear in mind the age of the candidates, it is a minimum test. Under present conditions there are not many Oxford colleges who will admit candidates without a matriculation examination in addition to "Smalls," though almost all accept a Senior Certificate of the Joint Board, provided it includes Latin, Greek, and elementary mathematics, as exempting from matriculation, in addition to the exemption which it officially gives from "Smalls." It is probable, therefore, that another year, if the candidates are still to be men who have done two years' university work elsewhere, the standard of examination will be raised without injustice either to the candidates or to Oxford. The new arrivals have entered with plenty of zest into our games: one of them—an Australian—appeared with credit in the first Rugby match against the London Scottish, while Schutt, late of Cornell and now of Brasenose, is a distinguished runner.

We have up here once more been engaged in the compilation of details of the recent Home and Indian Civil Service competition. The year has been a veritable triumph for Oxford, which claims not only forty-six out of the whole eighty-seven successful candidates, but—a more remarkable achievement—ten of the first twelve. Of the forty-six New College produced five; Balliol, Hertford, and Trinity four each. There are two "Blues"—Hutchison (Rugby football) and Brinsley Richards (athletics). The competitors this year were of more level merit, if we may infer this from the fact that the first man was credited with 157 marks *less* than the first last year, while the last successful this year obtained 172 *more* than the last of 1903.

Those who wish to study Previous performances and estimate the value of Firsts in Mods. and Greats can find much food for reflection in the details which the *Oxford Magazine* will probably have produced before these lines see print. Firsts in Mods. with Seconds in Greats, and Seconds in Mods. with Firsts in Greats, seem as successful as two Firsts. Of course a Second in Greats may have been the symptom of the fact that a man was devoting more time to his Civil Service than his University examination. If an injustice is thereby done to the University, it ought to be removed when the new scheme by which the standard of age for the Indian Civil Service is raised a year comes into operation.

We have two new Professors. Dr. Osler, however, the Regius Professor of Medicine, will not be in residence, we hear, till the Easter term. His appointment has given universal satisfaction, and has put an end, we hope, to the somewhat undignified dissensions in the Medical School as regards the Professorship. The other new Professor, Mr. Raleigh, is already in residence, and by his stature recalls the days of the "Magdalen giant."

Among recent Fellowship appointments the success of old Wykehamists is striking: Mr. Zimmern at New College, Mr. Moberly at Merton, Mr. Thompson at Magdalen, and Mr. Temple (son of the late Archbishop) at Queen's.

The University football teams began their season on October 22, and in each case with a victory, the Rugby Fifteen defeating the London Scottish, and the Association Eleven Oxford City.

(*From our own Correspondent.*)

Cambridge.

RESIDENTS who returned to Cambridge in the Long Vacation found it swept and garnished, but not exactly empty; the British Association filled up every available nook and cranny, and the picnic was thoroughly enjoyed by all who attended. The leaders of our scientific circles generously returned from their summer holiday to entertain, and in some cases to amuse, the cosmopolitan crowd of guests who demand and receive the hospitality of the resident members of the Association. Mr. Seward and Mr. Heycock carried out their duties of organization in a remarkably thorough manner, and earned many thanks for their self-sacrificing endeavours.

The University Extension meeting at Exeter was also a grand success. It was a happy idea to choose Devonshire as the place for the wise men from the East to confer together, and many came back with a sorrowful conviction that our predecessors made a mistake in settling down on the banks of the muddy

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Cam instead of by the brawling Exe. Mr. Cranagé, the genial Secretary of the Local Lectures Syndicate, was very much to the front, and the movement has received a fresh impetus. Anything is to be welcomed which shows the outside world that there is life in the old place.

With a view to reduce the number of examinations a scheme has been formulated for the mutual recognition of elementary examinations by the Universities of Oxford, Cambridge, and London. This is as it should be. The candidate who rides at the weak spot in the fence will not be able to take much advantage out of the new scheme, which at first sight appears a sound attempt to eliminate unnecessary examinations.

Dr. Morgan, Master of Jesus, is still lying seriously ill in Morayshire, and, though the latest reports are more hopeful, it will be some time before the distinguished invalid can be among us again. "Black Morgan" (as he is distinctively called) has devoted himself heart and soul to the interests of his college from his freshman's year to his mastership; it was his doing which raised Jesus to the unique position which it held twenty years ago; for thirty years he simply has been the college. Old Jesus men will wish him a speedy and complete recovery, a wish which every Cambridge man will share.

The loss of Mr. Ronald Hudson by a mountaineering accident in Wales deprives St. John's of one of its ablest men. A quarter of a century ago Prof. Balfour's death, since then Prof. Hopkinson and Mr. Clay—surely Cambridge has sacrificed enough to this form of adventure.

The arrangements for conducting the military education of our Army candidates are almost complete. Put briefly, the University candidate will have to take his degree to show he knows something; he will have to be attached for three months to a military unit, to show that he can do something; and he must pass an examination in military subjects, to show that the University can teach him something. Then he will be selected by a board of University men, who will consider him from all points of view—mental, moral, and physical. When his hair is getting grey, and he is weary of work, he will be gazetted, and learn the goose step. The curious part of the scheme, as at present foreshadowed, is that a candidate may be attached to a regiment, though there is absolutely no provision that he should even know the elements of drill. In time the thing may work well, but the Syndicate in charge does not look very strong on paper.

Dr. Chase, President of Queens', has resigned the Vice-Chancellorship, and devotes the first fruits of his leisure to acquiring the game of golf, winning the Captain's prize at Royston, with the creditable score of two up to bogey, and giving promise of many like successes in the future.

Mr. Beck, the incoming Vice-Chancellor, is too well known and popular a man to need mention in these notes. It is very good of him to give the University some of the care and attention which f or years he has lavished upon his boys, or what is usually known as Trinity Hall.

Trinity has distinguished itself in the selection of Fellows, Dr. Lapsley, of Harvard, being one of the fortunate ones. Three Scotchmen and one Englishman complete the tale.

Our football team has been badly defeated by Richmond, but, for all that, is likely to turn out quite one of the best sides we have had for years. The golf club is ensnaring fresh recruits, as the popularity of the game outside is reflected here. Our rowing prospects never were rosier; and, in the competent hands of the present ruling body, a good crew should be the result.

The entry of freshmen is up to the average, but the shortage in the Medical School increases. The deficiency is entirely at the lower end, but the pecuniary question cannot in this case be disregarded.

The man without a hat is now quite safe in our streets.

London. THE University of London has just issued its list of University Extension courses arranged for the present session. In addition to the Central Courses given in the University itself, at South Kensington and Gresham College, and University College, courses have been arranged in every quarter of London, in all about seventy courses, covering a wide range of subjects. Some of the courses, like those on General History by Dr. Reich at the University and at Gresham College, form part of a three years' course of work in the Humanities under the scheme of continuous work adopted by the Senate last year. One of the most interesting courses in the session will be that on "The Evolution of Mankind as seen in the Child and the Race," to be given at University College on Monday evenings. The first year's work will consist of five lectures by Dr. Chalmers Mitchell, on General Biology, to be followed by ten lectures on Anthropology by Dr. Westermarck and a further ten on Animal Psychology by Prof. Lloyd Morgan. These lectures are specially designed for teachers, but will be of interest to all.

In the Department of History will be included, amongst others, the following interesting courses:—"The Local History of the South-Eastern Counties," at Beckenham, and "The History and Antiquities of Surrey," at Croydon, by Mr. Malden; "Social and Industrial England," at Ealing and Erith, by Dr. Holland Rose; "Japan and China," at Streatham and Sutton, by Mr. Ernest Foxwell. In the Department of Literature, "Greek Tragedy and some of its Masterpieces," by Mr. Churton Collins, at the Regent Street Polytechnic; "Dante," by Mr. P. H. Wicksteed, at the City of London College, Barnet, and Upper Holloway; "Social Forces in Nineteenth-Century Literature," by Mr. W. H. Hudson, at Woolwich and other centres; "Life and Literature of the Nineteenth Century," by Dr. Rickett, at Toynbee Hall and Muswell Hill. In Art, Mr. Gaskell will lecture on "Umbrian and Venetian Painters," at Bromley; and Mr. Arnold Mitchell on English Architecture, at Chislehurst. In the Department of Science, Prof. Vivian Lewes will give a course at Balham, New Cross, and Rotherhithe on the "Chemistry of Air, Fire, and Water"; Dr. Fison will lecture on "Great Discoveries in Science," at Gresham College; and Prof. Bottomley will give a course, at Hammersmith, on "Recent Researches on Bacteria in relation to Life." In the Department of Economics, Mr. Alfred Milnes will give courses at the Regent Street Polytechnic, the City of London College, and Battersea; while at Canning Town a special course on "Problems in the Life and Labour of the People," will be delivered by Mr. J. Hartmann Morgan. At various pupil-teacher centres lectures on "The Aims and Methods of Geographical Study" will be given by Mr. Chisholm and Mr. Andrews. Most of the courses will be delivered in the evening, and the fees are sufficiently low to bring them within the reach of every one.

At a general meeting of Convocation (October 11) the following resolution was passed:—"That Convocation desires to point out to the Senate that the graduates now qualified, but not registered, as members of Convocation number upwards of four thousand, and to suggest the issue to those graduates whose addresses can be traced of an invitation to join Convocation, accompanied by a statement of the advantages thereof." Convocation numbers about 5,300 members. Among "the advantages thereof" is a vote for the M.P. for the University, for the Chancellor, for the Chairman of Convocation, and for sixteen members of Senate.

Leeds. THE inauguration ceremony took place on October 6, when honorary degrees (announced in our last issue) were conferred on a number of persons distinguished in various walks of life.

Aberystwyth. THE two hundred undergraduates at the University College of Wales, Aberystwyth (says the *Daily Chronicle*), have adopted a remarkable self-denying resolution. By the rules of the college, students of both sexes attend the same lectures, and survive the same examinations, but for several sessions past the Senate has forbidden the men students to speak outside the college walls to their fair fellow-students. A ten minutes' *tete-à-tête* was allowed between lectures, but recently even that short interval was curtailed, and now the proctor's bell tolls the parting knell at seven minutes past the hour. The irony of this curious social situation is heightened by the fact that the ladies are at liberty to accompany any ex-student or country cousin along the seaside promenade or through the town. For some mysterious reason, however, girl undergraduates have this session taken a hair out of the senatorial dog that bit them. They convened a general meeting at the Alexandria Hall hostel, where they passed a resolution to have no social intercourse outside the college boundaries with any man whatsoever! The young gallants of Aberystwyth are curious to know how long this feminine boycott will prevail.

St. Andrews. PRINCIPAL DONALDSON, in an inaugural address, spoke on the reconstruction of the Arts course, referring particularly to the question raised by the Senatus of the University of Glasgow three years ago, that the academic year should consist of three terms, and

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not (as at present) of one winter session and one summer session. The success of the system in Germany seemed to indicate the line that the Scottish Universities should take. A distinction should be drawn between studies that were preparatory to scientific research. These preparatory studies could not be carried out by their schools as they were in Germany, where the pupils remained till they were nineteen or twenty. Therefore they must bring some of them within the universities. The subject was a very large one, and many years might elapse before it took practical shape.

Dundee. The Council in their annual report state that the statistics for the year were the most satisfactory yet presented to the Governors. The attendance reached 208, as compared with 184 in the previous session. Within seven years (from the restitution of the union with the University in 1897) the figures had risen by regular annual increments from 84. Evening classes in subjects of general culture continue to be offered by the College, but for some years past the attendance had been gradually declining. While, doubtless, there were subsidiary causes, the main reason for the falling off was to be found in the largely increased facilities for day study. The Training Department for Teachers continues to make excellent progress. In the session recently completed (the fourth since the inception of the work) there were 64 students in attendance, an advance of 12 upon last year.

THE ST. LOUIS DECLARATIONS.

WHAT THE AMERICAN TEACHERS THINK.

The American National Educational Association at its annual Convention, held at St. Louis on July 1 last, adopted the following Declaration of Principles :—

1. We cannot emphasize too often the educational creed first promulgated more than a century ago that, "religion, morality, and knowledge being necessary to good government and the happiness of mankind, schools and the means of education shall for ever be encouraged." This declaration of the fathers must come to us now with newer and more solemn call when we remember that in many parts of our common country the fundamental questions of elementary education—local taxation, consolidation of weak schools, rational supervision, proper recognition of the teacher as an educator in the school system, school libraries, and well trained and well paid teachers—are still largely unsettled questions.

2. We would direct attention, therefore, to the necessity for a supervisor of ability and tact for every town, city, county, and State system of public schools. Not only are leaders needed in this position who can appreciate and stimulate the best professional work, but qualities of popular leadership are also demanded to the end that all classes of people may be so aroused that every future citizen of the Republic may have the very best opportunity for training in social and civic efficiency.

3. The very nature of the teacher's task demands that that task be entrusted only to men and women of culture and of intellectual and moral force. Inadequate compensation for educational work drives many efficient workers from the schoolroom, and prevents many men and women of large ambition for service from entering the profession. It is creditable neither to the profession nor to the general public that teachers of our children, even though they can be secured, should be paid the paltry sum of 300 dols. a year, which is about the average annual salary of teachers throughout the country.

4. The Bureau of Education at Washington should be preserved in its integrity, and the dignity of its position maintained and increased. It should receive at the hands of our lawmakers such recognition and such appropriations as will enable it not only to employ all expert assistance necessary, but also to publish in convenient and usable form the results of investigations: thus making that department of our Government such a source of information and advice as will be most helpful to the people in conducting their campaigns of education.

5. We would emphasize the necessity for the development of public high schools wherever they can be supported properly, in order that the largest number possible of those who pass through the elementary grades may have the advantage of broader training, and for the additional reason that the public elementary schools are taught largely by those who have no training beyond that given in the high school.

6. As long as more than half of our population is rural, the rural school and its problems should receive the solicitous care of the National Educational Association. The Republic is vitally concerned in the educational development of every part of its territory. There must be no forgotten masses anywhere in our Union of States and Territories, nor in any one of its dependencies.

7. We believe that merit and merit alone should determine the employment and retention of teachers; that, after due probation, tenure of office should be permanent during efficiency and good behaviour; and that promotions should be based on fitness, experience, professional growth, and fidelity to duty. We especially commend the efforts that are being made in many parts of the country whereby teachers, school officials, and the general public working together for a common purpose are securing better salaries for teachers and devising a better system for conserving the rights and privileges of all and for improving the efficiency of the schools.

8. We declare further that, granted equal character and efficiency, and equally successful experience, women are equally entitled with men to the honours and emoluments of the profession of teaching.

9. We advocate the enactment and rigid enforcement of appropriate laws relating to child labour, such as will protect the mental, moral, and physical well-being of the child, and will be conducive to his educational development into American citizenship.

10. The responsibility for the success or failure of the schools rests wholly with the people, and therefore the public schools should be kept as near to the people as practicable; to this end we endorse the principle of popular local government in all school matters.

11. Since education is a matter of the highest public concern, our public-school system should be fully and adequately supported by taxation; and tax laws should be honestly and rigidly enforced both as to assessments and collection.

12. We congratulate and thank the management of the Louisiana Purchase Exposition for giving education first place in the scheme of classification, for the location and grandeur of its building, and for the extent and arrangement of the educational exhibits. Such recognition of education is in harmony with the genius of our democracy and will stimulate interest in popular education throughout the world.

THE TEACHERS' REGISTER.

MODIFICATION OF REGULATIONS.

An official Addendum to Statutory Rules and Orders, 1903 (No. 384, as amended to March 1, 1904), announces that the Board of Education "approve the regulations framed by the Consultative Committee on February 25, 1904, modifying and altering the regulations for the formation and keeping of the Register of Teachers." Regulation 2 is altered so as to read:

2. A person shall be entitled to be placed on Column B of the Register of Teachers if he satisfies the Registration Authority that he fulfils the conditions set forth in Regulation 3; or, if he applies at any time within *four* years from the establishment of the Registration Authority to be placed on Column B of the Register, and satisfies the Registration Authority that he fulfils the conditions set forth in Regulation 4.

"Four" years, instead of "three." Further, "Oxford Pass Examination for Women" has been added by the Board of Education to Appendix B. Moreover, the following schools have been recognized by the Board of Education for the purposes of the regulations mentioned in each case :—

Regulation 3 (2) (ii.).

London: Convent of the Sacred Heart, Roehampton.
" Streatham Hill and Brixton High School.
Liverpool: High School, Belvidere Road.
" East Liverpool High School.
Reading: Leighton Park School.

Regulation 3 (2) (iv.).

Long Eaton: Trent College.

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A meeting of the Council was held at the College, Bloomsbury Square, on October 15. Present: Mr. E. A. Butler, Vice-President, in the Chair; Prof. Adams, Mr. Armitage Smith, Mr. Barlet, Mr. Baumann, Rev. J. O. Bevan, Rev. J. B. Blomfield, Rev. A. W. Boulden, Mr. Bowen, Mr. Charles, Mr. Easterbrook, Mr. Eve, Miss Jebb, Mr. Kelland, Rev. G. E. Mackie, Mr. Millar Inglis, Bishop Mitchinson, Mr. Morgan, Mr. Pinches, Miss Punnett, Mr. Rule, Mr. Starbuck, Mr. Storr, Rev. J. Twentyman, Mr. Vincent, and Mr. Walmsley.

The minutes of the last meeting were read and confirmed.

Diplomas were granted to the successful candidates at the September Diploma Examination. (For list, see page 479.)

The Rev. J. O. Bevan and Dr. Newsholme were appointed to represent the College at a Conference on "School Hygiene" to take place in February, 1905.

Mr. Eve was appointed to represent the College on the Education Council of the League of the Empire.

The report of the Finance Committee was adopted.

The report of the Examination Committee was adopted.

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An interim report was received from the Committee appointed to inquire into the position of private schools under the working of the Education Act of 1902.

Dr. J. D. McClure, M.A., Head Master of Mill Hill School, was elected a member of the Council.

The following persons were elected members of the College:—

Mr. F. A. Sibly, M.A., LL.D. Camb., Haywardsfield, Stonehouse, Glos.

Rev. R. D. Swallow, M.A. Camb., Grammar School, Chigwell.

The following books had been presented to the Library since the last meeting of the Council:—

By the AGENT-GENERAL FOR NEW SOUTH WALES.—Coghlan's Statistical Account of Australia and New Zealand, 1902-3.

By the CAMBRIDGE UNIVERSITY PRESS.—Eve's Hugo's Les Burgraves; Summers's Tacitus' Histories, Book III.

By HACHETTE & Co.—Thémoin's French Lessons on the Gouin Method, Vol. II.; Weiss's Hauff's Die Geschichte Almansors.

By MACMILLAN & Co.—Hall and Stevens's School Geometry, Part VI.

By METHUEN & Co.—Beard's Easy Exercises in Arithmetic.

By the OXFORD UNIVERSITY PRESS.—Ramsay's Exercises in Latin Prose, Part III., Syntax.

Calendars of St. Andrews University, Birmingham University, Leeds University, and Queen's College, Cork.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—ED. *E.T.*]

LORD MACAULAY AND GERMAN THEORIES.

To the Editor of "The Educational Times."

SIR,—In his "Journal" Lord Macaulay writes: "I deem the refutation of German theories the final cause of my life." That has been done without him, and we have the "History of England" instead. The best place now for German theories is the bottom of the *German* Ocean.

In Napoleon's time a wise and witty Frenchman said: "The English are the rulers of the sea, the French of the land, the Germans of the *air*."

A German himself, Lessing, a truly great critic, had the capacity to see and the courage to say: "No man can be a *great* fool without a *little* Latin." The modern foreign theorist, Zumpt, Latin Professor in Berlin University, wrote in his "Grammar" (Longmans, 1848): "Cicero's Latin is here faulty"!!!

Cicero wrote: "Ego qui *verser* [subj.] in judiciis," "I who engage in trial after trial" ("De Div.")—a *fact*, not a "conception," *direct, definite, absolute*; of course, an *important* fact.

Ovid, who wrote as good poetry as Cicero did prose, writes:

Ille ego, qui *fuerim* tenerorum lusor amorum,

"I that was the sportive bard of tender loves" ("Ep. Pont.")—another *fact, direct, definite, absolute*; of course, an *important* one.

Dyscolus, so called from having a tongue like a tomahawk and a temper like a rat-trap, called the mood *hypotaktikus*, which means *imperativus*, not "subordinate."

Priscian (Constantinople, A.D. 500), a good man, but bad grammarian, wrote a mountain mass of melancholy and mischievous nonsense about the most exquisite organ of expression through which the mind of man has contrived to breathe the music of eloquence and song. Macaulay saw whence it had come.

Such cunning they who dwell on high have given to the Greek.

—I am, Sir, &c.,
GAVIN HAMILTON.

Gattonside, Melrose, *October* 19, 1904.

MR. AVELING'S STATISTICS.

A correspondent points out that Mr. Aveling's statistics (cited last month, page 426) are based on misreading of the 1897 Blue-book (page 13). Mr. Aveling's error "lies in applying the figures for 'mixed schools' (which form about 16 per cent. of the whole number of schools and contain about 14 per cent. of the pupils) to the whole number of schools and pupils."

NOTE.—In reply to several correspondents, copies of Signorina Bambacioni's paper on "Voice Production" may be obtained from the Town Clerk, Town Hall, Folkestone (2d. each and postage).

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CURRENT EVENTS.

Fixtures.

AT the Members' Meeting of the College of Preceptors, to take place on the 23rd of November, the Rev. Dr. Scott, Head Master of the Mercers' School, will open a discussion on the new geometry teaching, in which the question of the object of such teaching, and the lines on which it is developing, will be debated. It is hoped that many who have had experience of the working of the new method will be present, and express their views on this important subject.

* * *

MR. BARTON KENT, F.R.G.S., will address the Société Nationale des Professeurs de Français en Angleterre on "L'Egypte et le Nil," at the monthly Conférence at the College of Preceptors on November 26 at 4 p.m.

* * *

UNDER the auspices of the Childhood Society, at the Sanitary Institute (72 Margaret Street, W.), Dr. T. B. Hyslop, M.D., M.R.C.P. Edin., will lecture on Mental Hygiene in Childhood," on November 10, at 8 p.m., and Miss M. E. Findlay, B.A., on "The Education of Girls," on November 24, at 8 p.m.

* * *

THE first of a series of lectures by men of note in the medical and teaching professions on practical hygiene, suited to the requirements of teachers, will be delivered at University College, Cardiff, on November 5.

* * *

THE Board of Education has issued the Time Table of Evening Science and Art Examinations in April, May, and June, 1905 (Form 90), and of the Day Examinations in June, 1905 (Form 90d). The Board is considering the question of discontinuing the Day Examinations after 1905.

Honours.

THE McGill University has conferred the honorary degree of LL.D. upon Earl Grey and Mr. John Morley, M.P.

* * *

COLUMBIA UNIVERSITY has conferred upon Mr. Bryce, M.P., the honorary degree of LL.D. Mr. Bryce was presented to the Council by Mr. Seth Low, ex-Mayor of New York, and formerly President of Columbia University.

Endowments and Benefactions.

AN anonymous donor has sent a £1,000 Bank of England note to the Treasurer of University College, Bristol.

* * *

UNIVERSITY COLLEGE, CARDIFF, will eventually receive some £15,000, under the will of the late Dr. Isaac Roberts, F.R.S. Part of the sum will be devoted to two scholarships for research in pure science—£50 a year each.

* * *

LORD RENDEL, President of Aberystwyth University College, has for the fifth time forwarded to the Registrar a cheque for £1,000—£750 to increase the stipends of the staff, and £250 to the county schools in Cardiganshire, Merionethshire, and Montgomeryshire, for exhibitions and bursaries.

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MR. FRANCIS GALTON, F.R.S., has founded in London University a Fellowship for the promotion of the study of "National Eugenics"—"the study of the agencies under social control that may improve or impair the racial qualities of future generations, either physically or mentally."

* * *

A LECTURESHIP in Physiological Chemistry has been founded in the University of Glasgow, on the basis of £8,000 left by the late Dr. John Grieve.

* * *

MISS THOMAS, of Llwynmadoc, has contributed £500 to the developments fund of St. David's College, Lampeter.

* * *

MR. ROBERT FLEMING, of Dundee, has given £1400 to Dundee University College, "to promote facilities for recreation for the students."

Scholarships and Prizes.

A COMBINED EXAMINATION for 63 entrance scholarships and various exhibitions at Pembroke, Gonville and Caius, King's, Jesus, Christ's, St. John's, and Emmanuel Colleges, Cambridge, will begin on December 6. Candidates must not be over nineteen on October 1. Application, with copy of register of candidate's birth and certificate of conduct, to be lodged by November 20. Forms to be obtained from Mr. W. S. Hadley (Pembroke), the Master (Caius), Mr. W. H. Macaulay (King's), Mr. A. Gray (Jesus), Rev. J. W. Cartmell (Christ's), Dr. Donald MacAlister (St. John's), the Master (Emmanuel).

* * *

QUEEN'S COLLEGE, OXFORD, proposes to extend to two other Yorkshire schools the privileges of the Lady Elizabeth Hastings foundation, enabling them to send two candidates for each vacant exhibition (£100 a year).

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Appointments and Vacancies.

SIR ISAMBARD OWEN, M.A., M.D., F.R.C.P., Senior Deputy Chancellor of the University of Wales, has been appointed Principal of the Durham College of Science, Newcastle-on-Tyne.

* * *

PROF. BERTRAM C. A. WINDLE, M.A., M.D., D.Sc. Dubl., F.R.S., F.S.A., Dean of the Medical Faculty and Professor of Anatomy in Birmingham University, has been appointed President of Queen's College, Cork, in succession to Sir Rowland Blennerhasset.

* * *

MR. HECTOR MUNRO MACDONALD, M.A., F.R.S., Fellow of Clare College and University Lecturer in Mathematics at Cambridge, has been appointed Professor of Mathematics in the University of Aberdeen.

* * *

AT the University of Birmingham, Mr. A. J. Ewart, M.A., D.Sc. Lond., Ph.D. Leipzig, F.L.S., has been appointed Lecturer in Botany, in succession to Dr. A. H. R. Buller, who has been appointed to the Chair of Botany (with Geology) in the University of Manitoba.

Mr. James J. Guest, B.A., has been appointed an Assistant Lecturer in Mathematics; Mr. A. Dupré Denning, B.Sc., Ph.D. Heid., an Assistant Lecturer and Demonstrator in Physics.

* * *

MR. D. NICHOL SMITH, M.A., Lecturer in English in the University of Glasgow, has been appointed Professor of the English Language and Literature in the Durham College of Science, Newcastle-on-Tyne.

* * *

MR. F. M. GOADBY, M.A., B.C.L., has been appointed a Lecturer in the Law Department of the University of Leeds.

* * *

MR. E. L. WATKIN, of University College, Bristol, has been appointed Professor of Mathematics at Hartley University College, Southampton.

Mr. S. B. Maclaren, Trin. Coll. Camb., succeeds Mr. Watkin at Bristol.

* * *

MR. GEORGE H. CARPENTER, of the Science and Art Museum, Dublin, has been appointed Professor of Zoology in the Royal College of Science, Ireland.

* * *

MR. SIDNEY H. WELLS and the Rev. James Went take the places of Prof. H. E. Armstrong and the Rev. Dr. Gow on the Consultative Committee of the Board of Education, the latter members retiring under the terms of the Order in Council constituting the Committee.

* * *

MR. W. GOWLAND, Professor of Metallurgy, Royal College of Science, has been appointed a member of the Examination Board of the Department of Technology of the City and Guilds of London Institute, in place of the late Sir Clement Le Neve Foster, F.R.S.

* * *

MR. J. L. HOLLAND, B.A., has been appointed Secretary to the Education Committee of the Northamptonshire County Council.

* * *

MR. ROBERT WILKINSON, Head Master of St. John's School, Bury, has been appointed Principal of the Technical School and Educational Adviser to the Education Committee of the County Borough of Bury.

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MR. J. H. HAIGH, B.Sc., has been appointed Education Secretary to the Ely Education Authority.

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MR. H. W. COOK, B.Sc., F.C.S., has been appointed Organizing Secretary to the Kent Higher Education Sub-Committee.

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MR. J. M. WYNNE, Head Master of Holly Hall School, Dudley, has been appointed Secretary to the Dudley Education Committee.

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MR. E. W. AXTELL-GARDENER, B.A. Oxon., assistant master in Bath City Secondary Day School, has been appointed Secretary to the Rutland Education Committee.

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MR. H. M. HOWARD, B.A. Lond., Norwich Pupil-Teachers' Centre, has been appointed Secretary to the King's Lynn Education Committee.

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THE REV. DR. WARRE has notified his intention of resigning the Head Mastership of Eton College at midsummer next year. He was appointed in 1884.

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THE REV. DR. WOOD, Head Master of Harrow, has been appointed Dean of Rochester, in succession to the late Dr. Reynolds Hole.

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M. A. DEBAILLEUL, Agrégé de l'Université de Paris, has been appointed Lector in French at Gonville and Caius College, Cambridge.

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MISS ELIZABETH SPEAKMAN, M.A. (Manc.), late University Fellow, has been appointed Assistant Lecturer in History in Manchester University.

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THE REV. WALTER NEW, M.A. Cantab., Head Master of Hale's Grammar School, Hertford, has been appointed Vicar of Exford.

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THE REV. EDWARD S. NOAKES, M.A. Cantab., M.A. and LL.D. Dub., Head Master of Magnus Grammar School, Newark, has been appointed Vicar of Edale.

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MR. FRANK J. FULLER, B.A. Cantab. and Lond., science master, Chesterfield Grammar School, has been appointed Head Master of the Salt School, Shipley.

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MR. T. W. IRELAND, B.A. Cantab., Hymers College, Hull, has been appointed Head Master of the Secondary and Pupil-Teachers' School, Mexborough.

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MR. J. A. HARRISON, B.Sc. Lond., A.R.C.S., Senior Science Master, Hulme Grammar School, Oldham, has been appointed Head Master of Whitehaven Secondary School.

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THE REV. WILLIAM PARKER, B.A. Dubl., M.A. Irel., assistant master, Sir R. Cholmeley's School, Highgate, has been appointed Warden of St. Columba's College, Rathfarnham.

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MR. REGINALD W. FERGUSON, B.Sc. Lond., A.R.C.S., Science Master, Newport Intermediate School, has been appointed Principal of the Municipal Technical School, St. Helen's.

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Mr. A. WATSON BAIN, M.A., assistant master in University College School, London, has been appointed Head Master of the Day Secondary School of the Woolwich Polytechnic.

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MISS LILLA B. STRONG, Head Mistress of the Church of England High School, Baker Street, has been appointed Head Mistress of the Diocesan School for Girls at Simla.

* * *

MR. W. E. S. TURNER, Research Scholar in Chemistry, Birmingham University, has been appointed a Demonstrator in Chemistry at University College, Sheffield.

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MR. T. L. HUMBERSTONE, B.Sc. Lond., A.R.C.S., has been appointed Assistant Registrar to London University.

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MR. THOMAS KEEN, M.A. Lond., second master, Barry County School, has been principal French master in the High School, Glasgow.

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MR. FRANK J. WYETH, B.A. Cantab., L.C.P., science master, Whitgift School, Croydon, has been appointed senior science master, Queen Elizabeth's College, Guernsey.

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THE Head Mastership of Aske's Hatcham School is vacant through the death of Mr. Alfred Barker, M.A., B.Sc.

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MR. F. W. G. FOAT, D.Litt., M.A., of the City of London School and the University Tutorial College, has been appointed Lecturer and Tutor in English at the City of London College.

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MR. DAVID MURRAY, M.A., B.Sc., Head Master of the Grammar School, has been appointed Rector of the Academy, Kilmarnock; and

Mr. David Lang succeeds him as Head Master of the Grammar School.

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MR. ARTHUR F. MURRAY, M.A., assistant in Forfar Academy, has been appointed Head Master of the Lower Academy.

Literary Items.

THE Oxford University Press is issuing a "Geometrical Political Economy," by Mr. H. Cunynghame, C.B. — "an elementary treatise on the method of explaining some of the theories of pure economic science by means of diagrams."

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THE Cambridge University Press announces Part VIII. of Sir Richard Jebb's "Sophocles"—The Fragments; "The Literature of the French Renaissance," in two volumes, by Mr. Arthur Tilley, M.A.; "The Nizam," the Le Bas Prize Essay, 1904—which should be specially interesting on the relations between Hyderabad and the Government of India during last century; "Vedic Metre in its Historical Development," by Prof. Arnold, of Bangor; and numerous other important works in many departments. "The Cambridge Companion to Greek Studies" is still on the stocks.

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MR. FISHER UNWIN is publishing, in his shilling series of "How To" manuals, "How to become a Teacher," by Mr. T. W. Berry, Editor of the *Pupil Teacher*. Primary, secondary, and special subjects are all included.

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MR. FISHER UNWIN announces "A Sketch of Chinese History" by Dr. F. L. Hawks Pott, President of St. John's College, Shanghai. Also a new impression of Mrs. Brightwen's popular book, "Wild Nature won by Kindness."

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MR. HALL CAINE'S novel, "The Prodigal Son," just published by Mr. Heinemann, has been issued simultaneously in eight languages, and translations into other six languages are in preparation.

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MR. DOUGLAS STORY, the first war correspondent attached to the Russian army and the first to reach the scene of operations in Manchuria, is also first in the field with "The Campaign with Kuropatkin," which is already announced by Mr. T. Werner Laurie.

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MR. T. WERNER LAURIE will shortly publish "The Queen's Progress"—a volume of Elizabethan sketches by Prof. Felix Schelling, presenting those spacious times under some of their more interesting sidelights.

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THE water-colour drawings of the Channel Islands which Mr. Henry B. Wimbush is now exhibiting in Bond Street have been reproduced in colour facsimile to illustrate a volume on "The Channel Islands," by Miss Edith F. Carey, which Messrs. Adam & Charles Black are just publishing in their delightful and handsome series of "Beautiful Books."

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THE Parents' National Educational Union issue in pamphlet form (3d.) Mr. J. L. Paton's fresh and stimulating paper on "Training in the service of Man."

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MR. H. OSMAN NEWLAND'S course of historical lectures to evening continuation classes on "Citizenship" will be published presently by Messrs. Elliot Stock.

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A NEW mathematical journal for teachers, the *Wiskundig Tijdschrift*—a quarterly (48 pages)—is announced at Rotterdam, under the editorship of Heer F. J. Vaes.

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THE October number of *Child Life* is fresh and attractive. Perhaps the most striking paper is Mr. Ebenezer Cooke's discussion of the question: "Is Development from Within?"—in reply to Mr. Graham Wallas's "Criticism of Froebelian Pedagogy" at the Conference of the Froebel Society in 1901.

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MR. VERE COLLINS, writing in the *National Review* for October on "Starving the Schoolmaster," anticipates that "a country that votes £13,000,000 a year to primary educa-

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tion will surely not stint supplies for higher education once the facts are squarely put before the public."

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Public Opinion (October 15) opens a series of articles on the "Public Schools of England" with an interesting paper on Harrow, by George W. E. Russell, M.A., LL.D., an Old Harrovian.

General.

Miss Welsh has been presented with a portrait of herself, subscribed for by past and present students of Girton College, and painted by Mr. John Lavery, R.S.A. The final destination of the portrait is probably the College Hall.

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The twenty-first anniversary of the opening of the University College, Cardiff, was celebrated on October 14.

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The offices of the University of Wales have been removed from Brecon to Cardiff.

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The Durham University College of Science, Newcastle-on-Tyne, will henceforth be known as the Armstrong College of Science in the University of Durham.

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The Fielden Demonstration School, expressly under the direction of Prof. Findlay, will be opened in Manchester in January next.

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The Board of Education have published a "Model Form of Register of Attendance" (Form 487).

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A new wing (for laboratories) has been opened at Magdalen College School, Brockley. This and other improvements have cost Magdalen College, Oxford, over £3,000.

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Miss Jessie Elliot Murdoch, M.A. Aberdeen University, has gained the Ferguson Scholarship in Philosophy, open to recent graduates of all the Scottish universities. This is the first time that a lady has gained a Ferguson Scholarship.

STUDY AFTER SCHOOL-DAYS.

By the Rev. J. O. Bevan, M.A., F.C.P.

At the Monthly Meeting of the College of Preceptors on October 19, Mr. James Wilson in the chair, the Rev. J. O. Bevan, M.A., F.C.P., read a paper on

HOW TO EVOKE A TASTE FOR READING AND CONTINUED STUDY AFTER THE PUPIL LEAVES SCHOOL.

The Lecturer began by referring to the importance of the problem attacked and the large number of young people affected. He pointed out the weakness of the present system and the imperfection of the results, enforcing his indictment by the opinions of leading men of all classes. Finally, he proceeded to inquire whether the child, the teacher, or the system was to blame. From this point the address is given *in extenso*.

How far is the System at fault?

In respect of this we can speak more freely, for a system is impersonal, and has neither soul to be saved nor body to be kicked. Therefore we shall all cheerfully acquiesce in the opinion that, if there be a fault, the system under which we labour is mainly responsible. Now, it may be acknowledged freely that it is always easy to pick holes in existing arrangements. In the present case, although one believes that a revolution is necessary, one realizes the enormous difficulty of effecting even a moderate improvement, seeing that there are involved so many elements of difficulty—the child, the parent, the teacher, the taxpayer, the Education Department, the Local Authority, the manager, the inspector, the existing buildings, and the prescriptive right of long-continued system.

Looking, however, at the above question from an ideal standpoint, one would say that school conditions were unnatural in respect of long hours, restricted posture, and compulsion of subject; that the teacher was burdened with too many pupils; that the mode of teaching was on lines altogether too literary; that the child's love of movement and discovery was unrecognized, and that the manual arts—the real things to be dealt with in after life—were largely ignored even in their general design. But one is conscious that one is speaking to practical people, who are beginning to ask themselves: "Now that the disease is allowed and diagnosed, what remedy is to be propounded?"

We will do our best to answer this query; but it must be observed that we are required to recognize the different classes of schools—primary and secondary, town and country, mixed and separate, large and small, rich and poor, well staffed and ill staffed, under public or private control. It is not to be assumed that every school would find it possible or convenient to carry out the following suggestions in full. Each of one's hearers must listen for himself alone. Neither can one hope that a revolution of this magnitude will be wrought in a day, with a word, or in connexion with the school alone. We have no quack remedy to prescribe. It needs must be that we begin by eradicating bad habits, before we indoctrinate new. We shall be required to labour earnestly and long before we see the fruit of our labours; and we must keep on striving to act upon the home, the parents, the churches, public opinion, the well informed, and the wealthy.

The Bettering of the Environment.

We begin by suggesting the bettering of the environment of the child in the school. Doubtless the school premises compare favourably with the homes from which many of our scholars would be drawn; but there is great room for improvement. In some cases the premises are ill-adapted to the education of the child in respect of form, colour, and adornment, not to mention light, cleanliness, and cheerfulness. The class-room is dull and grimy, there is an absence of brightness and attractiveness; the only illustrations consist of some works of the old masters represented by maps acquired in prehistoric times; the atmosphere is tainted; there is an absence of freshness, of the fragrance of flowers. This utilitarian aspect may be considered desirable; but it is a mistake, even for poor children—indeed, the poorer the child, the more striking should be the contrast between the home and the school. Doubtless the change advocated would meet with objection, and would not be wrought without expense and trouble; but it would be worth all the cost. The result of the transformation would be none the less effective in that it was largely insensible. We are familiar with the story of the effects following upon the gift of a simple flower to the residents in a dirty, neglected home. The folks found that they were required to live up to that flower, so that they set to work to clean the window in order to let in the sunshine; to scour the floor, whose condition became then painfully apparent; afterwards to paper the walls; and, finally, to look after their own dress and appearance. Frequently bad habits result from a dirty face and neglected apparel. The loss of one's self-respect and self-esteem entails the loss of all else. A man or child is *at* his best when he is *in* his best. Therefore we plead for the conversion of the class-room into the drawing-room and the school into a true palace of delight. Then we should be justified in laying our commands upon the children to keep the room clean and fresh, which there is no inducement for them to do now. As a result they would be influenced not only in their dress and appointments, but also in their behaviour.

The giving Greater Freedom to the Teacher in respect of Classification and Curriculum.

This would necessitate the breaking up of classes and the employment of a larger number of teachers, who would then be able to adapt their instruction to the circumstances of the scholars and to vary it according to changing seasons and conditions. A larger opportunity would be furnished to study the individual child; for it is clear that you cannot work individuals by one infallible and unchangeable rule. Every child is a special case and needs a special pill.

Our full suggestions may impose fresh tasks upon the scholar, and it must needs be that a part of the previous curriculum be dropped out. We suggest that grammar exercises may well be banished from many schools in the lower stages. The leading features are simple and easily understood at a later age. The graces of speech and composition are rarely learned through formal grammar: both are very much the result of imitation of the teacher and of good examples at home. The force of imitative-

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ness may be gathered from the fact that many of our scholars have a separate vocabulary and intonation for school and home, as also many domestic servants have for parlour and kitchen.

We may be unable to part with grammar without a pang, for frequently it is the only abstract subject in the time-table; but it will be understood that our recommendation mainly refers to schools and classes of an elementary character.

The Afternoon Ramble—The School Journey.

These should be carried out under the guidance of one who could teach the elements of geology and physical geography from the strata and conformation of the immediate neighbourhood; the teaching of these subjects from books alone being a wasteful and unsatisfactory proceeding. In all these science subjects we should aim at reaching the unknown from the known, the unfamiliar from the accepted. The school and vacation journey has great possibilities.

Treating Subjects as Living, not Dead.

Is there not a tendency on the part of teachers and examiners to consider school subjects from the fixed side; to look at geography as a thing merely of books and atlases; to consider history as a record, as of another planet, having no relation to men of our time or contemporary events; to regard English history as pieced out in watertight compartments, from 1603 to 1688, 1688 to 1815, and so on? Depend upon it, we lose much by not taking up current history. Rather should we deal, in a lantern, or otherwise, with things of the time, wrought out by men of flesh and blood, of like race and passions as ourselves, criticized in newspapers, illustrated in woodcuts, talked about in the streets and at the dinner table. Thus we should make much of such events as the Russo-Japanese war, in order to illustrate the teaching of history, geography, strategy, economics, international politics, and the like. All this is history in solution, and, like all things in solution, can be easily absorbed and digested.

Lantern Work.

The frequent use of a lantern is indispensable to illustrate science, geography, history, literature, archæology, art, biography, Scripture, and current events generally—of course, from the elementary side. It is not difficult for the teacher to cultivate the art of designing and executing lantern diagrams so as to set forth points of interest in successive lessons. A good deal of variety may be brought about by means of a lantern-slide exchange.

The Teaching of Literature.

So many references are made in this paper to experiment and scientific practice that one wishes, in this place, to emphasize the importance of teaching literature aright, so as to refine the character and elevate the taste. This subject, including the classics, is frequently taught in a perfunctory way; the subjects chosen are long, involving many lessons, and tending to disconnectedness, the thread being lost in the midst of a host of detail relating to derivation and the like, very little effort being directed to illustrate the action by rough maps or views. Consider how the teaching of such a poem as "The Lady of the Lake" suffers by the words being simply read from the page, without anything being done to enable the learner to visualize the scenes depicted, or to follow the action upon a diagrammatic map of the country involved. There is a muddle of names of persons and of places on the mind, but no sense of their relative order and importance.

The piece chosen should be short and dramatic; a brief synopsis should be given; any archaic word or allusion should be dealt with beforehand, and the names of persons and of places elucidated—then the piece could be dealt with as a whole. Certain portions might be committed to memory, and selected boys set to declaim them with appropriate action and emphasis before the class; or a lad might be bidden to select the passages which had struck him, and to read them aloud, giving reasons for his choice and for bestowing such and such an emphasis. The remainder of the class might be asked to comment upon the choice made, the discussion being naturally summed up by the teacher. Then (with the teaching of literature and the improvement of intellectual taste) would proceed, *pari passu*, the use of original composition in prose and verse, and the teaching of rhetoric, in the practice of which we, as a nation, are so lamentably deficient. In the United States far greater attention is given than with us to declamation and composition; indeed, in every country of Europe one finds that public speaking is of a more easy and graceful character than in England.

It would tend to interest the parents and managers and to brighten the children if the teacher could arrange social evenings, whereat the more proficient scholar—whether past or present—could recite or act, in character, or if he could arrange *tableaux vivants* to illustrate passages in history.

In connexion with this matter, reference may be made to the formation of school and class-room circulation libraries, and, in special cases, to the utilization of our public libraries and the addition to such institutions of children's departments, with books, both grave and gay, technical and imaginative, carefully chosen. This matter was discussed at the meeting of the Library Association recently held at Newcastle.

Nature-Study.

A strenuous endeavour should be made to utilize subjects calculated to awaken *interest* among young people and to implant a general knowledge of the world of which they themselves form a part. Herein, one rejoices at the spread of kindergarten principles, and at the growing attention paid to Nature-study, which alike aim at cultivating the powers of observation and inference—thus furnishing an excellent introduction to science, the study and application of which, both for boys and girls, are of increasing importance. The old-fashioned object-lesson in due serial form, if well and truthfully illustrated by experiments or pictures and models to scale, or, preferably, by the objects themselves, is by no means to be despised.

To cite a special case, what an introduction to the study of meteorology—a most practical study to all engaged in farming or navigation—would not be furnished by the introduction to the school premises of a vane, barometer, rain-gauge, and maximum and minimum thermometer! It would be considered quite a privilege for one of the senior boys to be allowed to take the observations; and this register and its variations might well be referred to by the teacher before the whole class at least once a week.

Movement.

Children are quickly stirred by things in motion. They desire to see not only results, but to find out—by looking at the "works"—how these results are arrived at. If we cannot have actual living things to show them by way of demonstration, at least we can simulate life by movement.

Introduction of Living Things and Animals.

Much might be effected in the schoolroom or the playground by way of concrete examples, such as would be furnished by an aquarium, a herbarium, the bird-cage, the rabbit-hutch, the patch of vegetables, grain, fruit, or flowers. This has been done with great advantage at the Sesame House, in Acacia Road, St. John's Wood. We are not concerned here to answer the questions: "Who would provide and look after these things, and keep them cared for? What could be done with the live stock on Sundays and holidays? How could boys (boys are such destructive creatures!) be prevented from breaking down and destroying everything?" Respecting these queries, we would follow the example of the Scotch minister, who said to his congregation, "We will look this diffeeculty fairly in the face, and then—pass on." We are satisfied that all such questions, in time, would answer themselves.

King Baby.

In the case of girls' schools of all grades, there is one animal, above all others, which should be introduced, *i.e.*, the human baby. In relation to every such school it is of prime importance to establish a *crêche*, even of half a dozen infants, into which certain of the elder girls might be introduced as a privilege. It would impart an element of sympathetic interest, and furnish teaching of real value at the time, and in respect of their future work and destiny.

The Inner Man.

Cookery should certainly be taught in every school, to boys as well as to girls. It would serve to solve a double problem. One is frequently struck by the meagre and unappetizing fare brought by many children in elementary schools for their luncheon. Could not something be done, at small cost, to supplement this provision, and to arrange that the elder children should be taught both to buy and to cook simple things in a simple way? With a certain amount of expenditure of time and labour, the problem of inexpensive breakfasts and dinners might be solved and the elements both of cookery and waiting inculcated. Furthermore we respectfully suggest to Sir John Gorst and others who are moving in the matter that the great question of supplying free meals to semi-starving school-children might be

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faced from this direction, viz., that of utilizing the resources of the school and of the children in the supply of their own needs. A writer in the *Parents' Review* for September, 1904, gives an illustrative example as to how this is done in certain cases; and one may here remark that almost every suggestion made in this paper has been based upon what has been experimented upon in certain quarters.

Carpentry, Glazing, and Bookbinding.

In large schools or centres, an opportunity might be furnished for teaching the lads these arts, partly in connexion with work required in their respective schools or furnished by their own wants. Instead of caning a boy for breaking a pane of glass, one might set him to work to mend it, thus carrying out the best part of Mr. Squeers's practical economy. In the case of girls, laundry work and house work generally should be brought in, and that in as real and natural a way as possible.

Visits to Museums.

These, of course, are no novelty; but they are rarely carried out with the organization and completeness characterizing the work in Leeds, where the success of the movement is largely due to the energy and skill of Mr. Crowther, the Curator of the Philosophical and Literary Society. In this respect, as well as in others adverted to, the children cannot be left to themselves to derive meaning and instruction from illustrations or exhibits: they must be personally conducted and in small squads, they must have the salient points brought out; they must be told what to look for, and, finally, be incited to give an account, after a short interval, of what they have learned. Thus, the matter naturally resolves itself into three parts—(*a*) the preparation for the visit, the notification of what is to be looked for, and its principal features; (*b*) the visit proper under suitable guidance; (*c*) the reproduction of the impressions derived, either *viva voce* or on paper. Such visits as we are advocating are permissible under the Code; but they are frequently ineffective because the children are not properly organized and looked after by one who knows what to select and how to describe the exhibit to the young. Mr. Crowther's enthusiasm and energy may well be commended to the imitation of those who have charge of pupils in secondary, as well as in elementary, schools. Prof. Findlay recently addressed the Manchester Teachers' Guild on "The Use of Museums in Education," and his paper contains several important hints.

The Help of Local Societies to be invoked.

There exists a large number of societies, scientific and literary, comprising many members, some of whom might be forward to help in this good work by way of advice or active service. No effort has hitherto been made to excite their sympathy or to secure their aid. Doubtless the members would need to be put in the way of helping the teacher and the scholar; but the field is immense and the subject one which suggests large possibilities. The lecturer trusts to have the opportunity, at no distant date, of bringing the matter under the notice of the delegates attending the Conference of Corresponding Societies inaugurated by the British Association for the Advancement of Science.

The Compilation of a School Journal.

The most noteworthy records of visits to museums, manufactories, public works or buildings might be incorporated into a school journal, neatly clasped together in manuscript. This might be duly circulated and then exchanged with a like journal from another school in England, or, better still, abroad. All this would serve to stimulate and maintain interest—*personal interest*; that is the point, for what a child takes a chief part in is likely to make a lasting impression. Such a journal might be used to illustrate the changes of the year, to chronicle the migration of birds, the occurrence of rare plants or animals, as well as to effect a record of school news. Incidentally, it would stimulate the powers of composition as well as of observation and logical expression.

Collections.

Encouragement should be given to scholars to form collections of natural objects, &c., for the school and for their own homes; such museums to be totally destroyed by fire every year or so, or exchanged for corresponding collections from another school; the danger being that the objects gathered together should become dusty and moth-eaten—a burden to everybody. Freshness and variety should ever be sought for; and the collection made *not for the sake of collecting*, but that it might be illustrative of the pupils' work and hobbies, *both work and hobbies* alike to be suggested and encouraged.

Vacation Schools to be started.

These have been carried out with great success of late in various places and in London at the Passmore Edwards Settlement, as witness the following extract from a vistors' journal:—

An hour was spent by the visitors in inspecting the classes in the buildings and in the gardens, where the children went through drill exercises and received lessons in dancing, singing, carpentry, clay-modelling, drawing, and cooking. The children also took part in various games, such as soap-bubble blowing, skipping, and sand-digging. The out-door lessons were given in a well wooded garden behind the buildings.

Abolition of Ordinary Holidays.

In view of the more reasonable and natural turn suggested to be given to education, it might be unnecessary to have any formal holidays; at all events, in elementary schools. These, at present, are much too long, in country districts sometimes extending over six weeks at a time; the parents are oppressed, the children are frequently turned out into the lanes or streets, they become *ennuyés*, the work of the teacher is impeded by reorganization, and by recalling to the scholars' minds what they have learned and then forgotten. Needless to say, though the school would be in continual session, opportunity would be found for holidays of a suitable length both for teachers and taught.

Happy Evenings Association and Night Continuation Schools.

An official report has lately declared that those of our elementary-school children in London and other large towns who have not as yet begun to earn have little to do out of school hours beyond playing weird games in back streets or moping in hot and overcrowded rooms. In our great public schools games are as highly organized as work, and probably too much is made of them; but at least it is contrived that no moment of the boy's day is unemployed, and that he learns how to play as well as how to work. Our elementary-school buildings and play-grounds are surely too valuable to be used only in day-school hours. In many districts the school is almost the only big and spacious thing, a thing "made for man," made for his growth, health, and general well being. By the kindness of the London County Education Authority, the Children's Happy Evenings Association is allowed to use the schools out of school hours; and it gathers round them a band of willing helpers, ready to be the children's friends and playmates.

So far—well, but it is also necessary to arrange for formal instruction for many who have left school at that early age which is permitted alike by the indifference of parents, of Parliament, and of society at large. After the lapse of a couple of years, it is found that these have forgotten a great part of that learning that had been instilled into them at the cost of so much labour and expense; so that there is a strong probability of a lapse into complete ignorance unless a further effort is made, and an organization provided for taking up the work and making it secure. What can be done by the free will of such scholars should certainly be done; perhaps fresh legislation may be ultimately needed to clinch the matter. In a recent number of the *Sunday Strand*, the Bishop of Hereford makes a remarkable suggestion. He says:

A new Continuation-School Act of Parliament is greatly needed in England to complete our truncated and consequently wasteful system of elementary education. It may be noted by way of comparison, or contrast, that in Germany a boy leaving the elementary school at the age of fourteen may be required to attend a stipulated number of continuation-school classes, generally amounting to three or four hours weekly, during every year until he is seventeen years of age. This law has long been in existence, and is adopted in many parts of the German Empire, and I observe that it has lately been put into operation in the city of Berlin. The boy thus grows up under regular and wholesome educational influences during his first three years of comparative freedom after leaving the elementary school. To secure this gain both in knowledge and character I desire to see attendance at a continuation school or class made obligatory up to the age of seventeen in England as it is in Germany. By this I mean that every boy should be required to attend, let us say, not less than one hundred lessons of a useful kind in the course of each year. But, to make the best of this system as a character-forming influence, I would allow one-third of these attendances to be made at a duly recognized Sunday school or Bible class. These Sunday classes would, under such circumstances, be largely and cheerfully attended everywhere, and they would become a centre and source of the best moral influences to an unprecedented extent.

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Here I might say that the Sunday morning schools instituted by the Friends in Birmingham and elsewhere have been of marked service. In connexion with this part of our subject, the importance may be insisted upon of enlisting the sympathy and financial help of our manufacturers in important centres. Now, in many cases—as practical men—they begrudge the heavy cost attaching to elementary education, because the results do not appear to be commensurate with the expenditure. It is imperative that they be appealed to to take part in the organization, to visit the schools, to offer prizes *to their own employés*—such prizes to take the form of mathematical instruments, tool trays, thermometers, microscopes, geological or botanical implements, rather than of money or books; so as to excite the attention of the youth to a certain subject, and to awaken interest in its continued study. In the case of girls, workboxes, fret-work apparatus, &c., might be bestowed.

The Introduction of Light Industries for Evening Work during Three Months of the Year.

In many cases, in schoolroom or kitchen, in town and country, ladies—this may well be ladies' work—have started such industries as wood-carving, toy-making, fret-work, leather-work, poker-work, repoussé-work, macramé, smocking, paper-folding for lamp shades and table ornaments, Venetian ribbon-work. The carrying on of these industries is important from the point of view of general education: it brings into operation the sympathies of willing helpers, and makes those engaged in them happy because it makes them useful. Furthermore—witness the case of toys, or, in another direction, of the rearing of poultry for the table or the production of eggs, or even of the cultivation of salads, after the Continental fashion—they might become of great industrial and economic importance. Why should we be so short-sighted as to send millions of money annually abroad for such things as we could easily produce or manufacture for ourselves? Weaving, and many industries of a like kind, used, in the lecturer's memory, largely to be carried on in the worker's home. Times are changed, but it would bring about a silent and salutary revolution in many ways if domestic and rural industries were to be inaugurated and encouraged.

Art and Play.

The cultivation of instrumental and vocal music, of drawing, painting, and modelling, and the fostering of reunions where our lads and lasses—often so loutish, *gauche*, and self-conscious—might be taught how to play games and learn "company" manners, can only be indicated, but, though they are placed last, they are by no means least, in importance, for all of us are compounded of more natures than one; work and play act and react and interact the one on the other, so that now, as always, "all work and no play makes Jack a dull boy."

Conclusion.

Time did not admit of the reading of the concluding portion of the lecture. This referred to: (*a*) the necessity for stimulating the interest of the young and for laying down a distinct principle which they could be incited to follow; (*b*) the need of a special organization and of a body of leaders and teachers apart from those engaged in day-school work; (*c*) the characteristics of that liberal and comprehensive education which should produce the new teacher fitted to carry on the new work. We shall hope to find a place for the substance of this portion in a future issue.

Miss FINDLAY said that children in elementary schools should receive such an education as would be of practical use to them in their home life. They might, for instance, be taught to scrub the floors and tables in the schoolrooms, and should be encouraged to perform similar duties at home. The schools for domestic economy aimed at giving a practical education of this kind, but they were over-organized and over-methodized, and the children were not encouraged to think for themselves.

Mr. ORCHARD said the subject of the paper formed one of the greatest perplexities of the present-day educationist. The lecturer had offered several practical suggestions, the most important of which related to the provision of suitable environment, the encouragement of initiative in the pupil, and the promotion of co-operation between teacher and pupil. The teacher should take care not to do too much for the pupil, but should encourage him to discover things for himself. He would thus arouse the interest of the pupil and cultivate a desire for knowledge which would remain after school life. Much might be done by the formation of student societies to foster the pursuit of the study of literature, and boys who had been taught to collect and classify natural objects would probably continue their studies of Nature after they had left school.

The Rev. J. B. ELLIS said he had for many years been connected with schools in the West Indies, where the conditions were entirely different from those which obtained in England. In the case of negro boys and girls, the greatest obstacle to the continuation of study after leaving school was a lack of vocabulary, owing to the limited number of text-books in use in the schools.

The CHAIRMAN said the problem under consideration was how to manage school life in such a way that when it was ended the lessons should not be regarded as final, but only as a beginning. At school the child was taught the use of the tools, but very little more; and, in proportion to what he had to learn afterwards, his knowledge was infinitesimal. The present methods of education did not allow sufficient play for the initiative of the child, and tended to destroy originality and individual judgment. Schools were now passing through a time of transition, and the outcome would depend upon how schoolmasters brought their forces to bear on the problem of the curriculum, which should be framed in accordance with local needs. A system of education which sent boys and girls out into the world without any taste for improving their minds or studying the great literature which had been handed down to us must be regarded as a complete failure.

Mr. BEVAN having replied to the remarks of the various speakers, a vote of thanks to the lecturer concluded the proceedings.

TEACHERS' DIPLOMA EXAMINATION.

SUMMER, 1904.

THE Summer Examination commenced on the 30th of August, and was held in London and at the following Local Centres:—Alnwick, Birmingham, Blackburn, Bristol, Colchester, Inverness, Jersey, Leeds, Manchester, Newcastle-on-Tyne, Plymouth, West Hartlepool, Sliema (Malta), Murree (India), and Worcester (South Africa).

The total number of candidates examined was 445.

The following are the names of the candidates who passed in the various subjects: (*hon.*) attached to a name, or to a letter denoting a subject, indicates that the candidate obtained Honours in the subject:—

Theory and Practice of Education.

FELLOWSHIP.

Creech, R. W.

LICENTIATESHIP.

Alleyn, Miss E.
Athey, J. W.
Balls, Miss A. F.
Boulton, Miss L. A. M.
Broadhead, J. A.
Clark, P.
Corcoran, Miss T.
D'Arcy, T. A.
Evans, H. E.
Ferguson, R.
Gale, W. J. M.
Goodchild, R. I. G.
Greenwood, T. A.
Grennan, Miss M. M.
Hardy, F.
Hardy, J.
Harris, A. E.
Hipkiss, Miss E. M.
Hobday, L. H. B.
Hodges, A.
Hodgkison, A. A.
Holmyard, I. B.
Judson, H. I.
Kelly, Miss A.
Lacy, C. E.
Leighton, Miss A. M
Marriott, F. C.
Mason, A. J.
McMahon, Miss B.
Monkhouse, J. A.
Moores, S. H.
Morgan, O. J.
Peirce, Miss M. E.
Phillips, G. F. T.
Pringuer, Miss B. M.
Quinlan, Miss W.
Rawcliffe, Miss A.
Richards, M ss F.
Robson, R.
Rootes, Miss H. M.
Rusbridge, C. B.
Schwemmer, Miss E. M.
Seward, F. B.
Slator, H.
Thornton, H.
Wanstall, Miss E. Goodwin.
Whitechurch, E. C.
Williams, D. T.
Wilson, W. J.
Woodall, Miss M.

ASSOCIATESHIP.

Angier, Miss E. L.
Argyle, R. C. B.
Ashcroft-Potter, Miss G.A.
Ancott, W. S.
Bailey, Miss M. A. M.
Baldock, G.
Barton, John (Accrington).
Barton, John (Marlboro').
Bassett, H.
Beale, E. R.
Bedford, W.
Billowes, H.
Blunt, G. W.
Botcherby, W. T.
Bowesman, E. B.
Brown, J. S.
Browne, H.
Buchanan, Miss C. B.
Bullock, Miss E. M.
Burfield, Miss G. E.
Burnet, Miss E.
Chapman, Miss M.
Charnock, E.
Cherry, A.
Clark, Miss K. D.
Cole, Miss A. M.
Collinge, J. F.
Cook, Miss E. M.
Coombes, Miss W. M.
Corbett, C. H.
Coy, Miss E.
Crowsley, A. B.
Dainton, Miss L. M. D.
Daniel, E. R.
Davies, E. E.
Davies, J. H.
Dovey, Miss E. J.
Driver, Miss L. M.
Earnshaw, Miss E.
Edge, W. H.
Elson, C. H.
Finney, F.
Gardner, Miss C. A.
Gardner, H.
Goddard, Miss C. L.
Gouldthorpe, Miss R. M.
Gray, Miss C.
Green, Miss E. E.
Harrison, Miss K. H.
Hastings, G. W.
Higson, J.
Hobbs, Miss C. A.
Horton, Miss A.
Ingrams, Miss E.
Jarvis, Miss J. A.
Jones, Miss E. I.
Jones, Miss K. A.
Kane, Miss M.
Key, C. T.
Kirkman, J.
Lawrence, L. W.
Lee, L. G. H.
Lewis, W.
Lilley, E. G.
Lillingston, C. H.
Lobb, H.
Lumb, Miss Edith.
Lundy, Miss M.
Macdermott, Miss M.
Macqueen, Mrs. E. A.
Manners, Miss M. E.
Markham, E.
Marlow, A. A.
May, F.
Monroe, Miss I.
Moor, J. W.
Moore, G. C.
Morgan, Miss A. V.
Morrell, Miss M.
Nash, Miss E.
Neal, A. B.
Nicol, Miss M. H.
Norris, C. E.
O'Donnell, Miss W.
Oglesby, F.
Oliver, J.
Pady, F.
Page, Miss L. E.
Palmer, Miss K. B.
Partridge, F.
Phillips, G.
Phillips, W. G.
Plant, Miss A.
Ponton, Miss D. C.
Power, Miss M.
Prideaux, P. H.
Prince, T. G.
Rampling, Miss L.
Raybould, A.
Rean, Miss A.
Ridout, C. J.
Robinson, J.
Rowland, O.
Sands, P. R.
Santer, F. T.
Sawyer, Miss H. L.
Schoonees, L. A.
Searle, Miss M.
Senyard, Miss M.
Shaddick, Miss L.
Sharples, H. R.
Smith, Mrs. E.
Smith, M. E. D.
Sparks, Mrs. A. A.
Stutchbury, Miss M.
Sumner, W.
Turner, J.
Turton, Miss C. E.
Vickers, G.

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Vickery, H. B.
Walker, Miss J.
Wall, Miss A.
Ward, Miss J. V.
Webb, Miss B. B.
Wertheim, P.
White, J. H.
Wilkie, H. J.
Wilkinson, Miss C. E.
Williams, E. H.
Williams, H. D.
Wills, Miss G. M.
Worsley, E. F.

Scripture History.

Denne, E. J.
Priest, S.

English.

(*Subject No.* 1.)

Andrews, J. C.
Angier, Miss E. L.
Ashcroft-Potter, Miss G.A.
Aucott, W. S.
Bailey, Miss M. A. M.
Bandulska, Miss H.
Beale, E. R.
Benson, Miss A. J.
Bentley, F. H.
Blake, W. T.
Boucher, Miss E. A.
Brown, J. S.
Buchanan, Miss C. B.
Bullen, Miss J.
Cassere, Miss M. N.
Charnock, E.
Cole, Miss A. F. M.
Collins, W. J.
Colville, Miss E. C.
Cottell, V. L.
D'Arcy, T. A.
Denton, W. S.
Derbyshire, Miss A.
De Saint-Ange, Miss I.
Dodd, Miss J. A.
Dorman, Miss C. A.
Dowling, Miss K. J. R.
Eacott, Miss M.
Edge, W. H.
Farmery, A.
Farrow, Miss M. A.
Fox, Miss V. M.
Gard, F. W.
Gouldthorpe, Miss R. M.
Greenough, Miss E. M.
Groves, G. H.
Harding, W. H.
Hart, Miss F.
Haskew, F.
Hodgson, Miss C.
Horton, Miss A.
Hosmer, W. A.
Kane, Miss M.
Kirby, J. P.
Kirkman, J.
Knaggs, Miss M.
Knight, A. E.
Lee, L. G. H.
Linfield, Miss E. V.
Lumb, Miss Edith.
Manigat, Miss M. A.
Markham, E.
Partridge, F.
Petit, Mme. J.
Phillips, W. G.
Pither, Miss K. L.
Pochard, Miss L. E.
Ponton, Miss D. C.
Poussin, Mme. B.
Prideaux, P. H.
Rice, J. L.
Rowland, O.
Sands, P. R.
Seward, F. B.
Smith, Miss B. M.
Smith, Miss L. L.
Tourle, B. L.
Vickers, G.
Waldron, E.
Walker, Miss A. L.
Walshaw, G.
Watson, P. O. S.
Wilkinson, Miss C. E.
Wilson, Miss D. M.
Wilson, W. J.

English History.

Abbott, W. D.
Alton, W.
Andrews, J. C.
Angier, Miss E. L.
Bachelor, G. C.
Baker, W. R.
Beale, E. R.
Benians, Miss E. E.
Benson, Miss A. J. (*hon.*)
Bilsborrow, Miss H.
Blake, W. T.
Botcherby, W. T.
Boucher, Miss E. A.
Bowtell, Miss A. M.
Brown, J. S. (*hon.*)
Buchanan, Miss C. B.
Bullock, Miss E. M.
Chamberlain, Miss E. K.
Charnock, E.
Christopher, H. E.
Coleman, Miss D.
Collins, W. J.
Colville, Miss E. C.
Comber-Taylor, Miss I. M.
Cottell, V. L.
Coyne, Miss M.
D'Arcy, T. A.
Denne, E. J.
De Saint-Ange, Miss I. (*hon.*)
Dodd, Miss J. A.
Eacott, Miss M.
Edge, W. H. (*hon.*)
Evans, A. V.
Farrow, Miss M. A.
Fraser, Miss A. D.
Garner, E.
Gouldthorpe, Miss R. M.
Groves, G. H.
Harding, W. H.
Hart, Miss F.
Hervouët, Mme. L.
Hilton, C. H.
Hodgson, Miss C.
Hunnybun, Mme. J.
Hynes, Miss E. A.
Jeffreys, R. H.
Kane, Miss M.
Keogh, Mme. M.
Kibblewhite, Miss E. M.
Kirby, J. P.
Kirkman, J.
Lee, L. G. H. (*hon.*)
Leonard, Miss M.
Linfield, Miss E. V.
Littlewood, L. E.
Luckett, J. T.
Lumb, Miss Edith.
Macdermott, Miss M.
Manigat, Miss M. A.
Markham, E.
Minne, Miss H.
Neal, A. B.
Newman, B. E.
Petit, Mme. J.
Phillips, W. G.
Pither, Miss K. L.
Poussin, Mme. B.
Prideaux, P. H.
Priest, S.
Rice, J. L.
Rowe, S. D.
Rowland, O.
Sands, P. R.
Satchwill, Mrs. M.
Seward, F. B.
Smith, Miss L. L.
Suckling, C. E.
Taylor, Mrs. F.
Townsend, E.
Vickers, G.
Waldron, E.
Walker, Miss A. L.
Walshaw, G.
Watson, P. O. S.
Wilson, Miss D. M.
Woods, W. S.
Yates, Miss E. M.

Geography.

Andrews, J. C. (*hon.*)
Angier, Miss E. L.
Ashcroft-Potter, Miss G. A.
Bachelor, G. C.
Bailey, Miss M. A. M.
Baker, W. R.
Bandulska, Miss H.
Beale, E. R.
Benn, W.
Benson, Miss A. J.
Bentley, F. H.
Biss, Miss H. H.
Blake, W. T.
Botcherby, W. T.
Boucher, Miss E. A.
Boughton, Miss O. K.
Bowtell, Miss A. M.
Brewin, Miss E. S.
Briscoe, Miss E. M.
Brown, J. S.
Buchanan, Miss C. B.
Bullock, Miss E. M.
Cassere, Miss M. N.
Charnock, E.
Charter, Miss L. A.
Christopher, H. E.
Clift, Miss E. A. (*hon.*)
Cole, Miss A. F. M. (*hon.*)
Cole, Miss A. K.
Cole, Miss A. M.
Collins, W. J.
Colville, Miss E. C.
Comber-Taylor, Miss I. M.
Cottell, V. L.
Coyne, Miss N.
Crowley, F. L.
D'Arcy, T. A.
Day, Miss K. E.
Denham, P. C.
Denne, E. J.
Denton, W. S.
Devine, Miss R.
Dixon, Miss M. J.
Dodd, Miss J. A.
Dovey, Miss E. J.
Dowling, Miss K. J. R.
Draper, Miss H.
Eacott, Miss M.
Edge, W. H.
Evans, A. V.
Farmery, A.
Farrow, Miss M. A.
Fawcett, Miss E. M.
Finney, F.
Fraser, Miss A. D.
Friend, Miss E. A.
Gardner, Miss C. A.
Gouldthorpe, Miss R. M.
Gray, Miss C.
Groves, G. H.
Haffner, Miss T.
Harding, W. H.
Hart, Miss F.
Hayler, H. V.
Henly, Miss M.
Herriott, Miss K.
Hilton, C. H.
Hobbs, Miss C. A.
Hodgson, Miss C.
Hodgson, J. C.
Horton, Miss A.
Hosking, L. T.
Hunnybun, Mme. J.
Hutchinson, Miss E.
Hynes, Miss E. A.
Ibbett, Miss D.
Innes, W. A.
Kane, Miss M.
Kirby, J. P.
Kirkman, J.
Knaggs, Miss M.
Knevitt, Miss M. T.
Lee, L. G. H. (*hon.*)
Leonard, Miss M.
Linfield, Miss E. V.
Littlewood, L. E.
Luckett, Mrs. C. G.
Luckett, J. T.
Lumb, Miss Edith,
Major, E. H. R.
May, F.
Neal, A. B.
Newman, B. E.
Niederleithner, F.
O'Sullivan, Miss M. E.
Partridge, F.
Phillips, W. G.
Pither, Miss B. M.
Pither, Miss K. L.
Prideaux, P. H.
Priest, S.
Rice, J. L.
Roberts, Miss R. A.
Rowe, S. D.
Rowland, O.
Sands, P. R.
Satchwill, Mrs. M.
Schwemmer, Miss E. M.
Scollen, Miss M. E.
Seward, F. B.
Shenton, J. R.
Smith, Miss B. M.
Smith, Miss L. L.
Taylor, Mrs. F.
Tourle, B. L.
Townsend, E.
Vickers, G.
Waldron, E.
Walshaw, G.
Wanstall, Miss Gertrude Elizabeth.
Watson, P. O. S.
Wilson, Miss D. M.
Wood, Miss E. C.
Wood, Miss N. G.
Woods, W. S.

Arithmetic.

Angier, Miss E. L.
Asher, J.
Bachelor, G. C.
Bailey, Miss M. A. M.
Baker, W. R.
Balls, Miss A. F.
Beale, E. R.
Benians, Miss E. E.
Benians, P. S. (*hon.*)
Benn, W.
Bentley, F. H.
Blake, W. T.
Brook, Miss A.
Brown, J. S.
Buchanan, Miss C. B.
Bullock, Miss E. M.
Carlos, J. B.
Christopher, H. E.
Clift, Miss E. A.
Collins, W. J.
Cottell, V. L.
D'Arcy, T. A.
Denham, P. C.
Denne, E. J.
Dowling, Miss K. J. R.
Eacott, Miss M.
Edge, W. H.
Evans, A. V.
Farmery, A.
Harding, W. H.
Harrison, Miss K. H.
Hobbs, Miss C. A.
Hughes, B.
Innes, W. A.
Knight, A. E.
Lee, L. G. H.
Linfield, Miss E. V.
Lumb, Miss Edith.
Macdermott, Miss M.
Meagher, Miss D.
Newman, B. E.
Partington, Miss A. F.
Partridge, F.
Phillips, W. G.
Pimm, C. H.
Pither, Miss K. L.
Pochard, Miss L. E.
Rice, J. L.
Rowland, O.
Sands, P. R.
Satchwill, Mrs. M.
Shurrock, Miss A. M.
Stokes, W. J.
Townsend, E.
Unwin, H. J.
Vickers, G.
Watson, P. O. S.
Wilkinson, Miss C. E.

Mathematics.

LICENTIATESHIP.

Benians, P. S.
Brown, F. G. W.
Bullen, Miss H. M.
D'Arcy, T. A.
Greenough, Miss E. M.
Hardy, J.
Holmyard, I. B.
Morgan, O. J.

ASSOCIATESHIP.

Edge, W. H.
Forrest, T.
Hughes, B.
Lumb, Miss Edith.
Newman, B. E.
Sands, P. R.
Spencer, F.
Townsend, E.

Algebra.*

LICENTIATESHIP.

Cook, Miss C.
Edwards, J. J.
Ferguson, R.
Hodges, A.
Kingston, W. W.
Lacy, C. E.
Mahony, Miss H.
Sporne, A. C.
Yates, Miss E. M.

ASSOCIATESHIP.

Cottell, V. L.

Geometry.*

LICENTIATESHIP.

Lambert, W.
Ridge, W. T. B.

Trigonometry.*

LICENTIATESHIP.

Cook, Miss C.
Edwards, J. J.
Hodges, A.
Laws, Miss R. N. C.

Conics.*

LICENTIATESHIP.

Edwards, J. J.
Gray, Miss M. E.
Hodges, A.
Lacy, C. E.
Laws, Miss R. N. C.
Mahony, Miss H.
Sporne, A. C.
Yates, Miss E. M.

Languages.

e = Higher English, *f.* = French, *g.* = German, *gr.* = Greek, *l.* = Latin.

LICENTIATESHIP.

Addis, Miss A. C. *f.g.*
Bullen, Miss H. M. *f.l.*
Campe, Miss Z. *f.*(*hon.*) *l.*
Gale, W. J. M. *e.l.*
Gottlieb, J. M. *f.g.*(*hon.*) *l.*
Harold, C. W. *f.l.*
Hodges, A. *e.l.*
Hunnybun, Mme. J. *e.f.* (*hon.*)
Innes, W. A. *l.gr.*
Kelly, Miss A. *f.l.*
Macpherson, Miss C. *f.l.*
Martin, Miss A. M. *f.g.*
McLoughlin, Miss M. M. *f.*(*hon.*) *l.*
Norton, A. C. *e.l.*
Pass, G. J. *e.f.*
Rusbridge, C. B. *f.l.*
Schwemmer, Miss E. M. *f.g.*
Thornton, H. *Lgr.*

ASSOCIATESHIP.

Ashcroft-Potter, Miss G. A. *f.*
Brandt, R. *g.*(*hon.*)
Brown, J. S. *f.*(*hon.*)
Bullock, Miss E. M. *f.*
Cassere, Miss M. N. *f.*(*hon.*)
Charnock, E. *f.*
Corbridge, H. F. *l.*
Cottell, V. L. *f.*(*hon.*)
Crowley, F. L. *l.*
Dovey, Miss E. J. *f.*
Elderkin, Miss A. L. *f.*
Gillespie, Miss M. E. J. *l.*
Groves, G. H. *f.*
Gurtner, Miss A. A. A. *f.*
Hervouët, Mme. L. *f.*(*hon.*)
Keogh, Mme. M. *f.*(*hon.*)
Kirby, J. P. *f.*
Petit, Mme. J. *f.*(*hon.*)
Phillips, W. G. *f.*
Pither, Miss K. L. *f.*
Pochard, Miss L. E. *f.*(*hon.*)
Poussin, Mme. B. *f.*(*hon.*)
Powell, E. T. *l.*
Puddephatt, Miss O. *f.*
Puttick, Miss A. *f.*
Rowland, O. *l.*
Shurrock, Miss A. M. *f.*
Wilme, B. P. *f.*(*hon.*) *g.*(*hon.*)

Higher English.*

LICENTIATESHIP.

Bell, A. J.

French.*

LICENTIATESHIP.

Ffrench, Miss E. M. (*hon.*)
Mason, Miss M. J.
McMahon, Miss B.
Miller, E. A.
Starkey, Miss S. (*hon.*)

German.*

LICENTIATESHIP.

Clift, Miss E. A. (*hon.*)

Italian.*

LICENTIATESHIP.

Carroll, Miss M. E.

Latin.*

LICENTIATESHIP.

Butcher, F. E.

* *Under Old Regulations.*

Science.

a. = Astronomy.
b. = Botany.
ch. = Chemistry.
g. = Geology.
m. = Mechanics.
p. = Experimental Physics.
ph. = Animal Physiology.
z. = Zoology.

LICENTIATESHIP.

Athey, J. W. *ch. ph.*
Balls, Miss A. F. *p.ph*
Barratt, E. C. *ph.b.*(*hon.*)
Beart, Miss A. M. *ph.b.*(*hon.*)
Benians, P. S. *p.m.*
Bolton, Miss M. *a. ph.*
Brown, F. G. W. *p.m.*
Dawson, Miss M. J. *ph.g.*
Eacott, Miss M. *m.b.*(*hon.*)
Gale, W. J. M. *ph. z.*
Hipkiss, Miss E. M. *ph.b.*
Hobday, L. H. B. *a.ph.*
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REVIEWS.

The French Revolution.

The Cambridge Modern History. Planned by the late Lord Acton, LL.D., Regius Professor of Modern History. Edited by A. W. Ward, Litt.D., G. W. Prothero, Litt.D., and Stanley Leathes, M.A. Vol. VIII.: *The French Revolution.* (16s. net. Cambridge University Press.)

The present volume is beyond all comparison the most complete, critical, and impressive history of the French Revolution disposed within manageable compass. Wide and complicated as are the issues involved, the main attention centres in Paris, and it is confined within a decade; the Consulate, which opens a fresh phase of European history, and the current politics of Great Britain, which are of subordinate European interest, being reserved for separate treatment elsewhere. While the regeneration of France is, of course, the main subject, there is interwoven with its processes a secondary interest: the fate of Poland—the ambition and intrigue of Russia, and the jealousy of Austria and Prussia over the Polish spoils. There emerge, too, intermittent indications of the coming Eastern question, which was to "occupy the energies and attract the ambitions of statesmen and diplomatists for more than a century to come." The volume depicts the various aspects of the great drama in twenty-five chapters written by well known English scholars—with one exception: M. Paul Viollet, Member of the Institute, and Professor of the History of Civil and Canon Law in the Ecole des Chartes, contributes the luminous chapter on French Law in the age of the Revolution.

The editors express effectively, if somewhat compendiously, the course of the main stream of events:

> The present volume traces the intellectual genesis of the revolutionary movement among the audacious thinkers and the philanthropic listeners of the eighteenth century. It shows how the institutions and the administration of France were unfitted to resist a violent shock, while her vacillating rulers hesitated to use such resources as the constitution placed in their hands. Benevolent enthusiasm, peaceful agitation, irresolute control, are succeeded by anarchy and terrorism; society seems to be resolved into its elements, and the fortunes of the nation to depend on the caprice and idiosyncrasies of a few chance-selected men. The impulse spreads beyond the frontiers. Europe gathers her forces to resist the destructive flood. France reacts to hostile pressure; institutions are extemporized in the midst of foreign and civil war; the organic unity of the French nation reasserts itself; order succeeds to anarchy, fixed aims to vague aspirations; and wars of conquest follow wars of self-preservation. Separately is described the attempt of legislators to break loose from the bonds of custom, convention, and tradition, and to build up a new scheme of human relations from a purely rational basis. Finally, the effect of these destructive and reconstructive ideas is traced in action and reaction through the chief countries of Europe; and the foundations of our modern political and social system become visible.

Mr. P. F. Willert opens the volume with a lucid review of the opinions and influence of the philosophers. "Even if we believe that the philosophers did not cause the Revolution, nor originate the ideas which determined the form it was to take, we must allow," he concludes, "that they precipitated it by giving a definite shape to vague aspirations, by clearing away the obstacles which restrained the rapidly rising flood of discontent, by depriving those whose interests made them the defenders of the old order of all faith in the righteousness of their cause, and by inspiring the assailants with hope and enthusiasm." Prof. Montague, who writes five of the earlier chapters with his accustomed ability, describes the mechanism of government and the condition of the different classes. He discounts largely the allegations of "the appalling misery of the French peasants," and points to growing population, riches, and enlightenment, and to a more reasonable and humane temper among administrators and judges under Louis XVI. than under Louis XIV. "But," he says, "in a society where personal freedom was general, landed property widely diffused, and every class aspiring to equality with the class above, evils which elsewhere might have been borne in patience were felt to be intolerable"; and "the long reign of a slothful and sensual Prince gave time for discontent to accumulate and criticism to become embittered." Mr. Henry Higgs ably examines the finances (and, later on, the Revolutionary finance). He finds that "in spite of the numerous reforms of Turgot and of Neckar, the finances of France on the eve of the Revolution illustrate every possible defect"; that, under the weight of imposts, "the very springs of industry were broken"; that in fact "fiscal burdens were ruining alike the Government and the people." As for the King, Prof. Montague, after the fullest allowances for inherited embarrassments, points out "that no other reign so forcibly attests the insufficiency in great affairs of good will unsupported by wisdom and firmness." Add the transition to untried modes of government without the necessary basis of success either in governors or in governed, and the cataclysm does not seem so much of a marvel. "The results were so strange because the agents had not even that dim prevision which, in ordinary times, is possible to public men."

We need not follow the outline of the stages or the outstanding episodes. Mr. J. R. Moreton Macdonald describes the Legislative Assembly, the National Convention, the Terror, and the Thermidorian Reaction, in four well informed and well balanced chapters. Dr. Rose Holland handles in masterly fashion the part played by Bonaparte; Mr. R. P. Dunn-Pattison deals with the general war, Mr. H. W. Wilson with the Naval War, Mr. G. K. Fortescue with the Directory, and Mr. H. A. L. Fisher with the Brumaire. Mr. Oscar Browning expounds the foreign policy of Pitt to the outbreak of war with France; Prof. Lodge treats the Eastern Question and the extinction of Poland; and Mr. G. P. Gooch closes the volume with a comprehensive chapter showing how the Revolution was regarded in the various countries of Europe. The bibliography, chronological table, and index are very full and correspondingly serviceable.

Dreams of Expansion.

The Food of the Gods; and How it came to Earth. By H. G. Wells. (6s. Macmillan.)

A physiologist and a chemist between them evolved a nutritive substance of power—"Herakleophorbia," "the Food of the Gods." Administered to the human subject, it raised the partakers to six or seven times the old normal proportions: the young men and the Princess stood some 40 feet in their stockings. Escaping from the experimental farm in Kent, it nourished similarly gigantic wasps, rats, &c. In a word, it threatened to upset the established law and order; did indeed upset it; for eventually the new order and the old came to blows, and the history breaks off in the middle of the struggle, with a presage of the victory of the "Boomfood" people—"a great black outline against the starry sky—a great black outline that threatened, with one mighty gesture, the firmament of heaven and all its multitude of stars"—the new Ajax defying the lightning.

The development of the story of the Boomfood undoubtedly has its interest—the interest of the exaggerated—the interest of the ordinary amazing rough-and-tumble story for boys. The boys will not wince at the contemptuous treatment of scientific men other than the practical engineer; nor will their nerves be jarred by lack of literary finish. If the cultivated reader, fortified by the belief that the author must have some underlying serious purpose, and stimulated from time to time by a lively thrust, hold on through, say, two-thirds of the volume, it will probably begin to dawn upon him that Mr. Wells is pushing his hasty ideas of social reform in a new guise. What idiots are those little folk that have not eaten the Boomfood of new ideas and obstruct progress! The thesis has indeed a serious side in

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every department of human thought; but, after all, the adversity of vexatious obstruction is not without its uses, and in any case we have to put up with gradual and slow development. The outpouring of satire upon the ignorant little folk that still persist in stoning the big prophets is natural enough; but probably a more effective process would be for the prophets to take measures to make their messages clearer to the dull of understanding, and especially to guard against immature and inopportune propagandism. It does seem a grievous pity that Mr. Wells will not get away from a hopeless tilting at windmills, which he has no great skill in, and expend his capacity and energy upon really artistic work in a sphere whose conditions he does understand.

CAMBRIDGE ENGLISH CLASSICS.

Richard Crashaw: Poems. The Text edited by A. R. Waller. (4s. 6d. net. Cambridge University Press.)

Crashaw can hardly be said to be a popular poet, but his work is of varied interest and exhibits many turns of curious felicity, and this handsome edition will render it readily accessible. The volume presents, for the first time in a single collection, the whole of Crashaw's poems—Latin as well as English; nay, there are even some Greek examples among his "Epigrammata Sacra," of 1670. The poems and epigrams issued by the Cambridge Press in 1634 and 1670, and those contained in the Sancroft MS. in the Bodleian, are faithfully reproduced from the originals. The "Steps to the Temple" and "The Delights of the Muses" are from the editions published by Humphrey Moseley "at the Princes Armes in St. Pauls Church yard" in 1648. The considerable series of poems under the general title of "Carmen Deo Nostro" is from the edition issued at Paris by Peter Targa, "printer to the Archbishope of Paris," in 1652, and the small plates engraved from Crashaw's own drawings are reproduced beautifully at the end of the volume. The pages thus have a quaint aspect, and the reader feels that he is brought face to face with the real Crashaw in his own times. In his instructive prefatory note and in his critical appendix, as well as throughout the text, Mr. Waller exhibits the utmost editorial care. Students of English literature will be very grateful for this elaborate and generously furnished edition.

GENERAL NOTICES.

CLASSICS.

The Tragedies of Sophocles, translated into English Prose. By Sir Richard C. Jebb, Litt.D., Regius Professor of Greek and Fellow of Trinity College in the University of Cambridge. (5s. net. Cambridge University Press.)

A very tasteful and handy volume, containing the English version of the plays in the author's great edition of the poet's works—"to meet the convenience of some readers." A brief introduction is prefixed to each play, so as to put the reader in position. In the translation Sir Richard Jebb keeps a free hand, refusing to be tied to a literal rendering. Probably readers that do not know the Greek will wish he had been still more free—more English, and less Greek, in the cast of expression. Still, there is something to say on the other side, and, in any case, the rendering conveys the poet's meaning very accurately and gracefully. The volume will be specially instructive in schools and colleges.

Roman Literature. By Hermann Joachim. Translated by L. D. Barnett, M.A., D.Litt. (1s. net. Dent.) (The Temple Cyclopædic Primers.)

Like the rest of this admirable series of compendia, the small volume is very skilfully packed with the essential matters of its subject. Its scope is properly ample: it comes down to the legislation of Justinian. The treatment is competent and fresh, the only drawback arising from the narrow compass, which sometimes necessitates a round statement without desirable qualifications. But, within the space, the work could hardly have been better accomplished. The get-up is very tasteful, agreeable, and substantial.

MATHEMATICS.

Notes on the Teaching of Elementary Geometry and Algebra. By C. D. Chambers, M.A. (1s. net. Waghorn.)

The methods of which the author here gives a brief summary have been employed by him in the training of his own classes, and the success which has attended their use has encouraged him to publish them in the hope that they may be of service to other teachers. In practice, he has found it expedient to vary the details of the methods ordinarily adopted in applying certain well known algebraic principles, and some novel and welcome hints are to be obtained from a perusal of his pamphlet. As a matter of course, all the suggestions made will not win unqualified approval. For instance, while Mr. Chambers's mode of leading up to the theory of indices is satisfactory, yet his definition of a power of a number is not equally good, though it is superior to the erroneous definition which he justly condemns. Again, many mathematicians will still maintain that the idea of direction is irrelevant to a first explanation of the meaning of an algebraic expression. The early attention now paid to the study of *graphs* gives rise to the author's proposal, but the intimate connexion between arithmetic (the science that deals with particular numbers) and algebra (the science of number generally) furnishes a strong argument in favour of introducing the beginner to algebra as generalized arithmetic, and of deferring for the moment the consideration of positive and negative quantity. The student is very soon in a position to grasp the broader conception of number, and the application to geometry may then be pointed out. The notes on the teaching of geometry are very good. The eye is to be made to assist the mind in following the course of an argument, and to this end the use of chalks of different colours in diagrams is recommended. The idea is not an original one, but Mr. Chambers appears to have developed the method more systematically than many of its advocates, and in a manner calculated to produce excellent results. It is, of course, understood that the device should be employed only as an aid to the first study of propositions; these cannot be said to be fully mastered until such assistance as is not always available is no longer required.

Knotty Points in Euclid (Books I.–IV. and VI.); and Key to the same. By Alfred E. Ikin, B.Sc. Lond., L.C.P. (2s. 6d. net and 1s. net. Normal Correspondence College Press.)

The first of these volumes combines a reprint of the two "Parts" of a small text-book designed by the author as an aid to the student of Euclid and intended for use in connexion with any standard edition of the "Elements." The "Key" is new, and furnishes hints for the solution of the examination questions reproduced in the text-book itself. Some of the solutions are very neat, and, if the volume is legitimately used, it will be of service to the student and enable him to avoid waste of valuable time. The production of a cheap key readily accessible to students of every type is always, however, a source of danger to the cause of true education. Of this the author himself is aware, and he expresses the hope that the benefit to the earnest worker will more than counterbalance any evil that may arise from an occasional abuse of the assistance offered. There is an unfortunate lack of finish in the arrangement of the letterpress and in the reproduction of the diagrams; and the various forms of type might be more pleasingly and effectively combined. We should hope to see improvement in these points in a future edition.

Longmans' Senior Arithmetic. By T. F. G. Dexter, B.A., B.Sc., and A. H. Garlick, B.A. (4s. 6d. Longmans.)

A well written book. The simple methods of explanation and the fullness of the reasons given for the processes employed make the text-book a specially suitable one for students working alone. It will also be very acceptable to teachers. The exercises are nearly all selected from the question papers of a large number of public examining boards.

ENGLISH LITERATURE.

Dryden: An Essay of Dramatic Poesy. Edited by Thomas Arnold, M.A. Third Edition, Revised by William T. Arnold, M.A. (3s. Clarendon Press.)

It is amusing to read that "the drift of the ensuing discourse was chiefly to vindicate the honour of our English writers from the censure of those who unjustly prefer the French before them," and that it was "written in the country without the help of books or advice of friends," and then to find Mr. W. T. Arnold stating that "perhaps the most prominent feature of my revision is the copiousness of quotation from Corneille," for "in no other way did it seem possible to bring home to the reader the greatness of Dryden's debt—extending not only to ideas and arguments, but even phrases—to his French contemporary." Mr. Arnold, indeed, has added a very considerable body of useful notes, besides those quotations from Corneille, and sensibly strengthened the edition. The "Defence" of the essay is also given. Apart from Dryden's handling of interesting critical questions, it is gratifying that there should be a school demand for Dryden's vigorous English.

"The Mermaid Series." *John Dryden.* Edited by George Saintsbury. In Two Volumes. (2s. 6d. net each. Fisher Unwin.)

We are glad that Prof. Saintsbury has made two volumes of his selections from Dryden's plays, and not merely one; and we hope he will yet be encouraged to add a third volume, for which, as he himself points out, there is good material of distinctive characteristics. The present two volumes certainly "give the reader as fair an opportunity as is possible in the space of seeing what the greatest writer of English verse and prose in his own special time managed to do in that remarkable department of literature which lays both prose and verse under contribution." The introduction gives a luminous sketch of the state of the stage and the influences operating upon it when Dryden began his dramatic work, and reviews generally the main features of his plays. Prof. Saintsbury is a candid critic as well as an admirer of Glorious John; but his candour will not deter any worthy

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student of our literature from making, or renewing, acquaintance with the powerful intellect and the astonishing literary craftsmanship displayed in these plays. The volumes are beautifully printed on thin paper, and attractively got up. We should add explicitly that they make a fresh addition to the series, and a valuable addition, and are not a mere reprint.

An Introduction to the Poems of Tennyson. By Henry Van Dyke, D.D., LL.D., Professor of English Literature in Princeton University. (2s. net. Ginn.)

Five essays showing the growth of the poet's mind and art, the methods he practised, the variety of his work, and the chief characteristic qualities of his poetry. They are cultured, careful, and sympathetic, and deserve the attention of all students of Tennyson and of English poetry. The thin volume is artistically printed and got up.

"Heinemann's Favourite Classics." *The Works of Shakespeare.* 6d. each.

Twelve more volumes confirm our earlier opinion of the excellence of this series. We may not always be able to follow the speculations of Dr. Brandes, but his introductions furnish in interesting form the substantial facts that a reader of the plays ought to know. The frontispiece plates will form a valuable gallery of Shakespearian illustration; and the volumes are light, handy, clearly printed, and attractive in appearance.

ENGLISH COMPOSITION.

English Composition for Continental Pupils. By J. Vellenga. Parts I. and II. F. 1.25 and 1.50. (Amsterdam: W. Versluys.)

Mr. Vellenga is head master of a municipal intermediate school in Rotterdam, and he evidently knows English very well. His work is intended to be "a class-book for beginners," and, as "there is, with the exception of some of the pictures, very little that is distinctively Dutch about it," it may be used for "Continental pupils" generally. His principle is that "English should be taught in English," and so his book is all English, no Dutch being visible in either volume. Of course, he contrives his lessons so that the teacher has maps, pictures, multifarious objects, to work upon; and he does reluctantly admit the native language for explanatory purposes, but only as a very last resort: "it is wonderful how seldom an experienced teacher has recourse to the mother-tongue." We know something of the plan as applied in England to French and German, and we confess to doubts about its limits. However, given an experienced teacher, we can readily understand that he would carry his pupils far forward on Mr. Vellenga's laboriously graduated lessons, with their varied repetitions. The whole system of lessons is most carefully framed. We hope the work will prove a success.

Errors in English Composition. By J. C. Nesfield, M.A. (3s. 6d. Macmillan.)

The volume is in two parts: (1) sentences to be corrected or justified, and (2) solutions of the examples. The collection is immense, and it is widely varied. The author gives reasons for the solutions he offers. The work should be extremely useful in schools where teachers concern themselves to discriminate between good and bad in English expression. Mr. Nesfield has a strong hold of principle, but, as we hinted recently, he seems to us occasionally to defer too much to formal or technical considerations. However, such points can be argued out in practice. No grammarian can unfailingly suit the taste of everybody.

The King's English, and how to write it. By John Bygott, F.Inc.S.T., F.I.P.S. (Honours), and A. J. Lawford Jones, of H.M. Civil Service. (1s. 6d. net. Jarrolds.)

The book is tolerably comprehensive: it deals with orthography, punctuation, grammar, auxiliaries of style, essay-writing, paraphrasing, indexing and *précis*-writing, &c., and gives "hints as to course of reading," and even instructions as to "style of note-book." The handling is breezy and unconventional, and the matter is abundant and roughly useful. But what is the use of telling pupils that it is incorrect to say: "Take more exercise, so that you might be strong"; or "One thought ourselves lost"? Nobody would ever either say or write the one or the other. Much of the exercise material will be very serviceable.

MODERN LANGUAGES.

A German Reader. By W. H. Carruth, Ph.D., Professor of Germanic Languages and Literatures in the University of Kansas. (2s. 6d. Ginn. International Modern Language Series.)

A pretty and handy volume "for first reading in German," with notes and vocabulary. The extracts are judiciously selected from authors of high repute: half a dozen considerable prose passages from popular story-tellers (Niebuhr, Andersen, Grimm, Zschokke, Hauff, Benedix), and nearly forty *Gedichte*, mostly old favourites that are ever fresh. The notes are generally useful, though some of them seem to be superfluous: prefixed to them are brief biographical sketches of the authors. There is a long series of elaborate and carefully graded exercises, based on the text: these offer ample scope for working up the material of the extracts. A vocabulary is appended. A very attractive, well considered, self-contained volume, capable of giving the pupil a good start and a decided impulse to go forward in the study of the language.

Japanese Grammar Self-taught. By H. J. Weintz. (4s. Marlborough. Self-taught Series, No. 18.)

The volume goes beyond the general scope of the series, for it aims at being "a complete manual of the Japanese language," as well as, and indeed rather than, a phrase-book for travellers and commercial people. The roman character alone is used throughout. Mr. Weintz frankly admits that "the syntax certainly *is* formidable to a European, as it is quite different from anything met with in Western languages," but he reassures one by stating that it is "of very minor importance," and that, after all, "one can make oneself understood after far less time spent in study than is necessary in the case of any European language." It is "syntactical accuracy" that is the serious difficulty. We do not profess to know much about it, but the method of the work strikes us favourably, and our experience of Mr. Weintz in fields nearer home gives us no little confidence in his Far East linguistics.

The Englishman in Egypt: Arabic. (Cairo: Mme. J. Barbier. London: A. Owen & Co.)

A handy list of useful words and phrases, English and Arabic (in roman letters), with explanation of Egyptian money in terms of English values.

Primer of Esperanto. By J. C. O'Connor, B.A. (1d. Dixon & Hunting and the Farringdon Press, Limited.)

Mr. O'Connor explains the grammar—what little there is to explain—and gives some exercises (with vocabularies) for practice. The system is sufficiently simple.

ART—DESIGN—DRAWING.

Messrs. W. & A. K. Johnston's "Simplex Drawing Books" have received two recent additions: (1) *Geometrical Pattern Drawing, Part III.*, by Ben Jonson, containing 270 patterns for elementary pupils. with full instructions (6d.); and (2) *Lettering, Part I.*, containing 326 examples of letters and numbers (2d. net). Both very satisfactory.

Messrs. Jarrolds publish nine pictorial *Post-cards* (6d.), from original water-colour sketches, representing important buildings or scenes in London. No doubt, the cards will be very popular.

CHRISTMAS GIFT-BOOKS.

I.

Historical Tales.

The foremost place among the historical tales of the season may well be assigned to *The Crusaders*, a story of the War for the Holy Sepulchre, by the Rev. A. J. Church, M.A., whose many previous stories are so widely known and appreciated (5s., Seeley). Prof. Church puts the story into the mouth of a wandering Jew. He does not attempt a continuous narrative of the Crusades, but seeks to please and instruct his readers by describing some of the more important events. But, still, the first, third, and eighth Crusades are narrated pretty fully, and a brief historical outline is appended, which will probably be filled out in the private reading of those that are sure to be charmed by the episodes described with unfaltering skill in this volume. The get-up is very handsome and attractive; and the book ought to be placed on the shelves of the school historical library.

In the Trenches, by John Finnemore (5s., Nelson), tells the stirring adventures of a rifleman in the Crimea. The Redan, the Malakoff, the thin red line on the heights of the Alma, the charge of Balaklava, the terrible day of Inkermann, the Siege of Sebastopol, the horrors of the winter, and numerous enterprises less known to history, give unfailing interest to the volume. Six full-page illustrations in colours.

Miss Everett-Green follows up her "Castle of the White Flag" of last year with a worthy successor, *Ringed by Fire* (5s., Nelson), a story of the siege and surrender of Metz in the Franco-German War of 1870-71. It takes a good hundred pages to get war declared, but the story goes on in brisk preparation; and thereafter there is no lack of excitement. The descriptive episodes give a remarkably vivid idea of the scenes of the time; and they are gracefully written. Six full-page illustrations in colour.

An interesting and well managed historical romance is *The Knights of Liberty*, by Eliza F. Pollard (5s., Nelson). The Carbonari organization was formed immediately after the battle of Waterloo, with the object of delivering France from the political influence of the Roman Catholic Church—"the yoke of oppression which was hateful to one and all" of the discontented members. The Saumur branch took the distinctive name of the Knights of Liberty. "We swear to deliver our brethren now lying in prison, the four brave sergeants of La Rochelle." There are plenty of plots and counterplots and adventures, with which a private story is dexterously intertwined. Six full-page illustrations in colour.

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Stories of Adventure.

Mr. A. T. Quiller-Couch has edited *The Red Adventure Book*, which contains a series of stories of stirring scenes and moving accidents from "The World of Adventure," printed spaciously on good paper and profusely illustrated (5s., Cassell). The stories are from widely separated ages and of widely differing character, but they are all strung upon a thread of romance. There are "escapes from fire, from prison, from shipwreck; deeds of battle, life-boat narratives, stories of Alpine daring, of African and Arctic exploration, of siege, famine, earthquake, and pestilence"—and other things. The catalogue is sufficiently promising. A most varied, attractive, and instructive collection.

The Pirates' Hoard, by A. Alexander (2s. 6d., Nelson), is, of course, a story of hidden treasure, and, being laid in the spacious times of Queen Elizabeth, gives prominence to brawny men of Cornwall and Devon, not omitting Sir Francis Drake; and it hovers about Lundy and Bideford rather than the Spanish Main. There is plenty of wrestling and fighting; and there is a missing casket of jewels to be recovered. A stirring and interesting narrative, written with directness and vigour. Two illustrations in colour, one of them exhibiting the redoubtable Captain Death.

There be land-rats as well as water-rats; and *Highway Pirates*, by Harold Avery, who has come steadily to the front as a writer for boys (3s. 6d., Nelson), takes its name from the doings of certain convicts on a certain high road. To be sure, there are school scenes of three-quarters of a century ago, and schoolboys are foremost actors in the development of the story, but the central interest is the unveiling of the mystery of the Singing Ghost of Coverthorne, and the adventures thereunto appertaining, to which the escapade of the convicts is really subsidiary. However, we do get to the sea, and into a cavern, where are brandy kegs, and so on to a subterranean tunnel, and—possibly enough, to the Ghost. There is, by the way, another big sample of the land-rat, who ought to have been a convict. The story is simply and effectively told. Four coloured illustrations.

Then there is *The Divers*, by Hume Nisbet (3s. 6d., Blackie), in a third edition, with eight coloured illustrations by the author. Many new readers will welcome this pleasant and bustling romance of Oceania, with good old Uncle Tom the Diver, and Queen Mané, and Minnie and Little Dido, not forgetting Ah Sin and his demon cat.

Flights of Fancy.

Mr. G. E. Farrow's multitudinous patrons have been keen to hear "more about the Wallypug," and so he gives them *The Wallypug in Fogland* (5s., Pearson). How it came about that the Wallypug sallied forth into Fogland, and what happened to him there (whether or not he was elevated to the throne), and why and how he came back again (if he did come back)—all this will be more interesting to discover than to be told. Certain it is that Mr. Farrow's imagination is as lively as ever, and that this new episode in the history of the Wallypug will increase the demands for "more." The illustrations, by Alan Wright, are numerous and effective; and the volume is got up in the usual handsome style.

This year it is *The Brown Fairy Book*, which must be somewhere about the tenth colour in Mr. Andrew Lang's very charming series of "Fairy Books" (6s., Longmans). It contains more than thirty stories, brought together from all quarters of the world—stories told by Red Indians, by Australian bush-folk, by African Kaffirs, by Hindus, Persians, Lapps, &c.; and they are delightful. And the volume is delightfully got up. There are eight coloured plates, twenty-two full-page plates in black and white, and twenty other illustrations in the text—all artistically designed and executed. Lucky will be the youngster to whose lot falls a copy of this engaging collection of stories.

Æsop's Fables, with a profusion (say, 100) of new and original illustrations by Maud U. Clarke (7s. 6d., Cassell), is furnished forth in large and handsome type on fine paper. The volume cannot fail to be a great favourite with the little folk that have the good fortune to obtain it.

The Romance of Fact and Fiction.

The Romance of Modern Locomotion, by Archibald Williams, who has already described the romantic aspects of Modern Invention and Modern Engineering, is a most interesting and instructive series of descriptions of the rise and development of the railroad systems in all parts of the world (5s., Pearson). The writer "peeps into the history of typical companies in Great Britain, the United States, and elsewhere; considers the various forms of traction, signals, and other mechanical appliances connected with the working of a railway; notices the effects of railway communication on a country for its peaceful development, or its conquest in war; and makes the tour of a typical locomotive factory"; and altogether gives a very fair idea of what the railway really is, how it has been made, and what the future may have in store for it. The descriptions are as far as possible free from technicalities. An excellent popular work, tastefully got up, with 25 distinctive and good illustrations.

Mr. Williams also offers *The Romance of Modern Exploration* (5s., Seeley). The whole field is much too wide for a single volume, and so he selects a small group of explorers belonging to the nineteenth century, and chiefly to the latter half of it, "whose exploits are in some cases unique, in others typical of what many other brave men have done." We follow the adventures of Dr. Sven Hedin in the Wilds of Asia and in Eastern Turkestan and Tibet; survey in India with Colonel Lambton, and in Tibet with Captain Deasy; visit Lhasa with Chandra Das; advance from Manchuria to the Pamirs with Colonel Younghusband; perambulate China and Eastern Tibet with Mr. T. T. Cooper; explore the East Indian Archipelago with Dr. Haddon; pass through Timbuktu, and down by the mouth of the Niger; accompany Livingstone, Du Chaillu, Joseph Thomson, in their African journeys; inspect the Sahara, Somaliland, and King Solomon's Mines; make "a brave dash for the North Pole" with Nansen, and a rash venture in the same direction with Andrée, as well as excursions to the South Pole with recent expeditions; and then take a turn through the Grand Cañon of Colorado, the forests and mountains of Canada, the forests of South America, the summits of Aconcagua and Tupungato, and the hinterlands of Australia. A book of absorbing interest, attractively got up, and furnished with 26 excellent illustrations.

The Romance of the Animal World is depicted by Edmund Selous in strikingly interesting descriptions of "the strange and curious in Natural History" (5s., Seeley). There are crabs, wasps, beavers, birds that make pottery, owls that live in burrows, ants that keep slaves, make tunnels and bridges, sow and reap, and grow mushrooms, angler-fish, leaf-resembling butterflies, jaguars and peccaries, whales and sword-fish, the sea serpent, snakes, gorillas—and countless other animals with more or less marvellous histories. An engrossing volume, most tastefully got up, and furnished with 16 illustrations by Lancelot Speed and S. T. Dadd.

Mr. S. R. Crockett lays aside the pen of fiction to present a most charming series of *Red Cap Tales* "stolen from the treasure chest of the Wizard of the North" (6s., A. & C. Black)—a first series. There were four children that would not read Scott, and so Mr. Crockett "told them these stories—and others—to lure them to the printed book, much as carrots are dangled before the nose of the reluctant donkey"—a comparison that ought to be withdrawn with suitable apology, for, if the children had been at the right age, they would not have required a lure. The stories are retold, very skilfully indeed, from "Waverley," "Guy Mannering," "Rob Roy," and "The Antiquary"; and no doubt we shall have more from other novels next Christmas—if we be good. The interludes of discussion between the story-teller and his young hearers are very interesting. The volume will undoubtedly prove a great favourite. It is spaciously printed, and very tastefully bound; and there are 16 coloured illustrations. Mr. Crockett, we should add, has done his best to translate all the hard words and phrases "in pity for children who have the misfortune to inherit only English."

For Girls.

Mrs. Molesworth brings *The Ruby Ring* this year (4s. 6d., Macmillan), and gives the stone as a birthday present to Sybil, a spoilt child of ten, who is discontented because she "thought it would be blue." Of course, if it had been blue, she would have grumbled because it wasn't red; just as she hated "every sort of lesson that ever was invented." Then gypsies come along, and "transformations" ensue. The story is prettily written, but there is more fancy than actuality in the results. Eight illustrations by Rosie M. M. Pitman.

The Little Heiress, by Margaret Bruce Clarke (3s. 6d., Nelson), is a bright and fresh story of the daughter of a millionaire orange-grower of California and an English mother, who comes to school at Stoneyhurst Hall, in Old England. A school difficulty leads to adventures and a clearing-up of unsuspected relations, and school ties eventually lead to other ties. A very spirited and healthy narrative. Four coloured illustrations.

Blind Loyalty, by E. L. Haverfield (2s., Nelson), is a sequel to "Our Vow." The loyalty is sufficiently tried, anyhow, and "blind" should rather read "persistent in the face of very grave dissuasives." The usual events of school life are worked out in fresh forms very interestingly. The story is skilfully arranged and attractively written. Eight full-page coloured illustrations, and a good many insets in black and white.

Diana Polwarth, Royalist, by J. F. M. Carter (5s., Seeley), is the story of a girl's life in the days of the Commonwealth, if not founded on fact, yet "at least resting on a background of fact." Political and religious elements of the period are worked into the development of the plot with judicious restraint, and the picture is outlined with considerable skill and in excellent tone. Eight illustrations by T. H. Crawford, R. S. W., and C. V. Harcourt. The type is large and the binding tasteful.

The Girls of Cromer Hall, by Raymond Jacberns (2s., Nelson), deals with the reformation of a badly spoilt little girl, in the course of which there are various perturbations in the school. It is brightly and sensibly written, and the interest is steadily maintained in a natural manner. Two illustrations in colour.

The Seymour Girls, by Geraldine R. Glasgow (9d., Nelson), is a pretty story of the first efforts of three girls in housekeeping. Two illustrations in colour.

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VARIOUS.

Archie Digby, by G. E. Wyatt (1s., Nelson), is a story of "an Eton boy's holiday," though really Eton has nothing particular to do with the matter. A strong moral is enforced on the basis of an awkward business that arises from thoughtless self-confidence on the way from the railway station to Digby Castle, and of another unfortunate affair that comes of proud recklessness on the ice at Christmas time. The author plans skilfully and writes pleasantly, but rather weakly brings wrongs more or less right in the end—an artistic failing that is, indeed, very widely approved.

Miss Julia Long, the author of "Two of a Trade," presents *The Water-finders* (1s., Nelson), a tale of the wonders of the divining-rod, and how it saved a village from a plague. It is a trying matter when a population of seventeen thousand fall very short of water, and fever begins to stalk about the place; and a divining-rod that actually does find water comes in useful. Anyhow, the interest of the story lies in the attitude of the villagers. Of course, there is a collapse of the workings, and other mildly exciting eventualities.

Mrs. Burton Kingsland has compiled *The Book of Indoor and Outdoor Games*, with suggestions for entertainments on special occasions in all the months of the year (Heinemann). If it be true that "the average hostess is not very inventive," this is the book for the average hostess; and young folk will find in it large and attractive additions to their repertory. The author has not only compiled—she has also invented—a good many of the games she recommends. There are more than six hundred well packed pages, lucidly descriptive of an enormous number of varied expedients for passing the time interestingly.

NEW ISSUES OF NOTABLE BOOKS.

Here is *Gulliver's Travels* "into several remote nations of the world," handsomely printed and furnished forth (6s., A. & C. Black). It has sixteen full-page illustrations in colour by Stephen Baghot de la Bere, and is sure to be a favourite with all young readers fortunate enough to obtain it.

Cook's *Voyages of Discovery*, always interesting, have been been freshly edited by John Barrow, F.R.S., F.S.A., with eight illustrations in colour by John Williamson, and printed in good round type. A fine prize book, brightly got up.

Messrs. Seeley issue a new edition of Miss Mitford's *Country Stories*, with illustrations by George Morrow (2s. net). The volume is beautifully and spaciously printed and very tastefully bound.

Messrs. Macmillan have placed Tennyson's *Idylls of the King* in their "Golden Treasury Series" (2s. 6d. net). The type is liberal and the form handy—a very welcome edition. The frontispiece represents Guinevere, after Woolner's marble.

ANNUALS.

The yearly volume of *Chums* (8s., Cassell) needs neither description nor recommendation to boys. Its 832 pages contain an immense miscellany of serial stories (six of them, by John Mackie, Andrew Horne, Arthur Rigby, Robert Leighton, Arthur J. Daniels, and E. C. Heath Hosken, more exciting than literary, indeed), pretty nearly 150 complete shorter stories, more than 100 chatty articles on subjects that more specially interest boys, and a great variety of other matters. There are twelve coloured plates and over a thousand pictures of one kind and another; and the volume is, as usual, brightly got up.

The *Quiver* yearly volume (7s. 6d., Cassell) is a solid and substantial collection of varied and readable matter, extending beyond twelve hundred pages, with six Rembrandt photogravure and coloured plates, and some eight hundred illustrations in the text. It has four serial stories of single-volume length, by Christopher Hare, Katharine Tynan, Agnes Giberne, and C. E. C. Weigall; and a great variety of papers, interesting and important, by a wide array of well known contributors. We may specially note a series on "The Makers of Modern Christianity" by the Dean of Gloucester. The high character and tone of the paper appear to be well maintained.

The *Girl's Realm* annual (Bousfield) also runs over a thousand pages, studded with upwards of twelve hundred illustrations and photographs, and embodying a vast variety of interesting stories, useful and instructive articles, humorous sallies, and miscellaneous matters. It is well printed and attractively got up, and it quite deserves the popularity it has gained.

FOR CHILDREN.

The annual volume of *Bo-Peep* (2s. 6d., Cassell) is indeed "a treasury for the little ones," with its simple stories in prose and in verse by popular writers experienced in catering for children, its fine bold type, and its many illustrations in colour and in black and white. Here and there, indeed, the type is in colour. A very attractive volume.—The smaller yearly volume of *Tiny Tots* (1s. 4d., Cassell) is similarly suitable for smaller children. Short stories, numerous verses and jingles, numerous pictures, some simple songs—all contribute to make an entertaining and varied collection.

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(*Continued on page* 486.)

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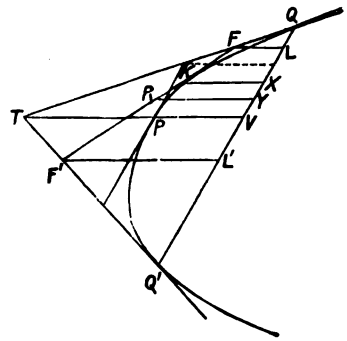
[Solution by elementary geometrical conics required.]



Solutions (I.) *by* R. F. Davis, M.A.; (II.) *by* W. F. Beard, M.A., *and the* Proposer; (III.) *by* Kela Deva Rau, B.A., *and others.*

(I.) Since QF : QT = QL : QV = 2QL : 2QV = QX : QQ′, therefore FX is parallel to TQ′. Similarly, F′X is parallel to TQ. Hence TFXF′ is a parallelogram, and the middle point of one diagonal FF′ coincides with the middle point of the other diagonal TX. But this latter point evidently lies on the tangent at P, etc. (See Milne and Davis, 1890, p. 25.)

(II.) Let FF′ touch the parabola at R and meet the tangent at P in G. Draw GM, RN parallel to the axis,

NM = ½VN, NL′ = ½NQ′;

therefore L′M = ½Q′V;

also NL = ½NQ;

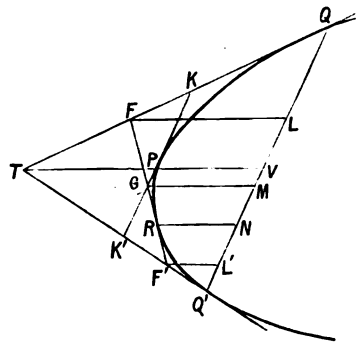
therefore

LL′ = ½QQ′ = Q′V;

therefore

LL′ = 2L′M;

therefore M is mid-point of LL′; therefore G is mid-point of FF′.



(III.) Let the tangent drawn from P meet TQ at K and FF′ at R. From F, K, R, T, F′ draw FL, KX, RY, TV, and F′L′ parallel to the axis. From a well known property of the parabola, PQ is bisected by KX; therefore VQ = 2VX. Similarly Q′X = 2Q′L′, Q′Q = 2Q′V; therefore QQ′ − Q′X = 2(Q′V − Q′L′), *i.e.*, XQ = 2L′V. But XQ = 2XL; therefore LX = L′V, and XY = VY; therefore LY = YL′; therefore FR = RF′, *i.e.*, FF′ is bisected by the tangent at P.

15500 & 15572. (Professor E. B. Escott.)—(15500.) Find two large consecutive numbers (> 10^{14}) all of whose prime factors are less than 100.

Examples: $a^2 = 7534241^2 = 11^2 . 13^2 . 19^2 . 47^2 . 59^2$,
$a^2 - 1 = 2^6 . 3^3 . 5 . 7^2 . 31^2 . 41^2 . 83$;

$a^2 = 15473809^2 = 13^4 . 19^2 . 61^2 . 79^2$,
$a^2 - 1 = 2^5 . 3^3 . 5 . 7^2 . 11 . 17 . 41 . 43 . 47 . 73$.

(15572.) Find two large consecutive numbers (> 10^{17}) all of whose prime factors are less than 200. Examples:

$a^2 = 306 . 331 . 585^2 = 5^2 . 7^8 . 17^2 . 19^2 . 79^2$,
$a^2 - 1 = 2^7 . 3 . 11^2 . 13 . 31 . 37 . 83 . 101 . 107 . 151$;

$a^2 = 315 . 630 . 756^2 = 17766^4 = 2^4 . 3^{12} . 7^4 . 47^4$,
$a^2 - 1 = 5 . 11 . 13 . 17 . 19 . 37 . 73 . 89 . 101 . 109 . 163$;

$a^2 = 940 . 737006^2 = 2^2 . 3^4 . 11^4 . 19^2 . 127^2 . 179^2$,
$a^2 - 1 = 5 . 7 . 13 . 17 . 23 . 31 . 41 . 47 . 59 . 71 . 103 . 193$.

Discussion of the more general Problem by the Proposer.

The Proposer discusses the general methods applicable to the solution of these problems as follows:—

In the computation of logarithms by means of the series

$$\log(x+a) = \log x + 2m\left[\frac{a}{2x+a} + \frac{1}{3}\left(\frac{a}{2x+a}\right)^3 + \dots\right]$$

it is important that we be able to determine two numbers $x+a$ and x all of whose factors are not greater than the number whose logarithm is desired. a should be small in comparison with x (preferably $a = 1$). Huygens (*Opera varia*, Vol. II., pp. 456–458) and Gauss (*Werke*, Band II., Seite 501–3) have given lists of such pairs of numbers suitable for calculating logarithms of numbers as far as 100.

The method I have used in determining these numbers is as follows. By methods which I shall give in a paper soon to be published I have obtained the following pairs of polynomials which have rational linear factors and which differ only in their constant terms. Some of these were given by Borda, *Logarithmic Tables;* Lavernède, *Gard. Notice Trav. Acad.*, 1807, pp. 179–192; Gergonne's *Annales de Math.*, Vol. I., 1810–11, pp. 18–51, 78–100; Lacroix, *Traité du calcul diff. et int.*, tome I., 1810, pp. 48–52; Secretan, *Comptes rendus*, t. XLIV., 1857, pp. 1276–9; Thomas Knight, *Phil. Trans. Roy. Soc. of London*, 1817, pp. 217–233; Wm. Allman, *Trans. Royal Irish Acad.*, Vol. VI., 1797, pp. 391–434.

i. $x(x-a-b) = x^2-(a+b)x$,
$(x-a)(x-b) = x^2-(a+b)x+ab$.

ii. In the preceding, let $b = -a$:
$x^2 = x.x$,
$x^2-a^2 = (x+a)(x-a)$.

iii. $(x+a+b)(x-a)(x-b) = x^3-(a^2+ab+b^2)x+ab(a+b)$,
$(x-a-b)(x+a)(x+b) = x^3-(a^2+ab+b^2)x-ab(a+b)$.

iv. In the last, let $a = b = 1$:
$(x+2)(x-1)^2 = x^3-3x+2$,
$(x-2)(x+1)^2 = x^3-3x-2$.

v. $(x-3)(x-5)(x+8) = x^3-49x+120$,
$(x+7)x(x-7) = x^3-49x$.

vi. $(x+11)(x-5)(x-6) = x^3-91x+330$,
$(x+9)(x+1)(x-10) = x^3-91x-90$.

vii. $(x+2)(x+11)(x-13) = x^3-147x-286$,
$(x+7)^2(x-14) = x^3-147x-686$.

viii. $(x+4)(x-1)(x-4) = x^3-x^2-16x+16$,
$(x+2)^2(x-5) = x^3-x^2-16x-20$.

ix. $(x+7)x(x-8) = x^3-x^2-56x$,
$(x+4)^2(x-9) = x^3-x^2-56x-144$.

x. $x^2(x+5)(x-5) = x^4-25x^2$,
$(x+4)(x+3)(x-3)(x-4) = x^4-25x^2+144$.

xi. $x^2(x-5)^2 = x^4-10x^3+25x^2$,
$(x+1)(x-2)(x-3)(x-6) = x^4-10x^3+25x^2-36$.

xii. $x^2(x-13)^2 = x^4-26x^3+169x^2$,
$(x+2)(x-3)(x-10)(x-15) = x^4-26x^3+169x^2-900$.

xiii. $(x+7)(x-7)(x+1)(x-1) = x^4-50x^2+49$ } (Practically same
$(x+5)^2(x-5)^2 = x^4-50x^2+625$ } as xi.)

xiv. $(x+5)(x+1)(x-2)(x-6) = x^4-2x^3-31x^2+32x+60$,
$(x+4)(x+3)(x-4)(x-5) = x^4-2x^3-31x^2+32x+240$.

xv. $(x+9)(x+1)(x-8)(x+5)(x-7) = x^5-110x^3+2629x+2520$,
$(x-9)(x-1)(x+8)(x-5)(x+7) = x^5-110x^3+2629x-2520$.

xvi. $(x-10)(x+9)(x+7)(x-2)(x-4) = x^5-125x^3+3004x-5040$,
$(x+10)(x-9)(x-7)(x+2)(x+4) = x^5-125x^3+3004x+5040$.

xvii. $x^2(x-7)^2(x+7)^2 = x^6-98x^4+2401x^2$,
$(x+8)(x+5)(x+3)(x-3)(x-5)(x-8) = x^6-98x^4+2401x^2-14400$.

As an example of the method, take the formula

$$\text{xvii.}\quad \frac{x^2(x-7)^2(x+7)^2}{(x+8)(x+5)(x+3)(x-3)(x-5)(x-8)} = \frac{x^6-98x^4+2401x^2}{x^6-98x^4+2401x^2-14400} \quad \dots\dots\dots\dots\dots\dots(1).$$

The numerator and denominator differ by 14400. If we choose x so that *either* numerator or denominator is divisible by 14400, then the other one will also be divisible, and after dividing both terms of the fraction by 14400 the numerator and denominator will differ by unity. Then x must satisfy the congruence $x^2(x-7)^2(x+7)^2 \equiv 0 \pmod{14400 = 2^6 . 3^2 . 5^2}$. The solution is

$$x \equiv 3, 5, 7, 13, 15, 17 \pmod{20} \quad \text{or} \quad x \equiv 0, 8, 32 \pmod{40}.$$

For example, if $x = 3325$,

$$\frac{5^2 . 7^8 . 17^2 . 19^2 . 79^2}{2^7 . 3 . 11^2 . 13 . 31 . 37 . 83 . 101 . 107 . 151} = \frac{306331585^2}{*}.$$

If $x = 4833$,

$$\frac{2^2 . 3^4 . 11^4 . 19^2 . 127^2 . 179^2}{5 . 7 . 13 . 17 . 23 . 31 . 41 . 47 . 59 . 71 . 103 . 193} = \frac{940737006^2}{*}.$$

[Rest in *Reprint.*]

15407. ("Stranger.")—Find a point on a given parabola which is the centre of a circle touching the curve and passing through its focus.

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Solutions (I.) *by* R. TUCKER, M.A.; (II.) *by* Professor SANJÁNA, M.A.; (III.) *by* LIONEL E. REAY, B.A.

(I.) The equation to the circle touching the parabola at $(am^2, 2am)$ and passing through the focus is

$$x^2+y^2-ax(3m^2+1)-ay(3m-m^3)+3a^2m^2=0.$$

Hence the co-ordinates of the centre are $2x=a(3m^2+1)$, $2y=a(3m-m^3)$, and, that this may be on the curve, $(3m-m^3)^2=8(3m^2+1)$, *i.e.*,

$$m^6-6m^4-15m^2-8=0=(m^2+1)^2(m^2-8).$$

Therefore $2x=a(25)$, $2y=a.5(2\sqrt{2})$.

[Rest in *Reprint*.]

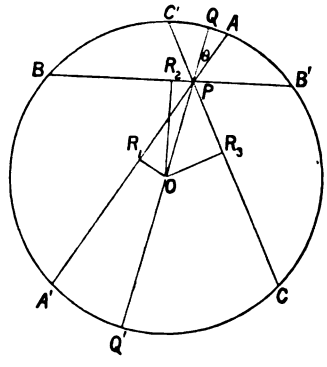
15488. (G. HEPPEL, M.A.)—P is any point within a circle. APA′, BPB′, CPC′ are three chords making angles of 120° with one another. Prove that AP+BP+CP = A′P+B′P+C′P, and that each ranges between 3 and $\sqrt{3}$ times the radius.

Solution by CONSTANCE I. MARKS, B.A.

The construction in the figure is self-evident. Also

$$\angle APC'=60°,$$

and similarly for each angle similarly formed. Let θ be the angle which is not greater than $60°-\theta$. Then



$$A'P-AP=2OP\cos\theta,$$

$$B'P-BP=-2OP\cos(60°+\theta)=-OP\cos\theta+OP\sqrt{3}\sin\theta,$$

$$C'P-CP=-2OP\cos(60°-\theta)=-OP\cos\theta-OP\sqrt{3}\sin\theta.$$

By addition, $(A'P+B'P+C'P)-(AP+BP+CP)=0$,

or $AP+BP+CP=A'P+B'P+C'P$.

Again, if P coincides with O,

$$AA'+BB'+CC'=2(AP+BP+CP)=3\times\text{diameter};$$

$\therefore$ $AP+BP+CP=3r=A'P+B'P+C'P=$ a maximum (r = radius).

Finally, projecting the diameter QQ′ orthogonally on each of the given chords

$$AA'+BB'+CC'>2r\cos\theta+2r\cos(60°+\theta)+2r\cos(60°-\theta)>4r\cos\theta.$$

Making $\theta=30°=$ a maximum, and $\cos\theta$ therefore a minimum,

$$AA'+BB'+CC'>4r\tfrac{1}{2}\sqrt{3}>2r\sqrt{3},$$

whence AP+BP+CP or A′P+B′P+C′P is always greater than $r\sqrt{3}$.

15627. (A. H. BELL.)—Give a formula for all integral right-angled triangles where the difference between the sides containing the right angle is 7.

Examples: 5, 12, 13; 8, 15, 17; ....

Solutions (I.) *by* Lt.-Col. ALLAN CUNNINGHAM, R.E., *and* R. W. D. CHRISTIE; (II.) *by* J. BLAIKIE, M.A.; (III.) *by* D. BIDDLE *and* W. H. BLYTHE, M.A.; (IV.) *by* C. BICKERDIKE.

[Solutions far too numerous to allow of publishing more than a few typical ones.]

(I.) The solution may be given in general terms, and then particularized. Let a, b, c be the sides; $c^2=a^2+b^2$, $a\sim b=d$ (a given quantity). Then there are *two* general solutions of the Diophantine $c^2=a^2+b^2$:—

(i.) $a=\frac{1}{2}(t^2\sim u^2)$, $b=tu$, $c=\frac{1}{2}(t^2+u^2)$; t, u both odd, or both even;

(ii.) $a=t^2\sim u^2$, $b=2tu$, $c=t^2+u^2$; t, u one odd, one even;

and the condition $a\sim b=d$ now gives rise to *four* Diophantines in t, u, which may be included in the single form $T^2-2u^2=\pm 2d$ or $\pm d$, where $T=t-u$. But, as it turns out that the $\pm$ signs of $2d$ and of d lead to the *same* solution, one sign (say $-2d$ and $-d$) may be neglected. Next, let T_0, u_0 be the *least* solutions of either of the two Diophantines $T^2-2u^2=+2d$, or $+d$, and let T_1, u_1; T_2, u_2, &c., be the next higher solutions in ascending order; then the general solution (T_n, u_n) is given by $T_n=T_1\tau_n\mp 2u_1v_n$, $u_n=T_1v_n\mp u_1\tau_n$ (both signs −, or both +), where τ_n, v_n is the nth solution of $\tau^2-2v^2=+1$. These last (τ_n, v_n) may be derived by known rules from the minimum solution $3^2-2.2^2=1$; or they may be taken direct from the present writer's new *Tables of Quadratic Partitions* (just published), p. 261, $\tau=3, 17, 99, 577, 3363, \ldots$; $v=2, 12, 70, 408, 2378, \ldots$.

Ex.—In the present case $d=7$, and the minimum solutions (T_0, u_0) are

$T_0=4$, $u_0=1$ in $T^2-2u^2=14$; $T_0=3$, $u_0=1$, in $T^2-2u^2=7$.

Observing that $t=T+u$, and that each pair τ_n, v_n gives *two* values for T_n and u_n (on account of the double sign in the formulæ for T_n, u_n), a few of the values of $T_n, u_n, t_n, a_n, b_n, c_n$ (as far as $n=2$) may be shown as in table below.

τ	.	3	17	&c.	τ	.	3	17	&c.
v	.	2	12	&c.	v	.	2	12	&c.
t'	4	8, 16	44, 92	&c.	t'	3	5, 13	27, 75	&c.
u	1	5, 11	31, 65	&c.	u	1	3, 9	19, 53	&c.
t	5	13, 27	75, 157	&c.	t	4	8, 22	46, 128	&c.
a	12	72, 304	2332, 10212	&c.	a	15	55, 403	1755, 13575	&c.
b	5	65, 297	2325, 10205	&c.	b	8	48, 396	1748, 13568	&c.
c	13	97, 425	3293, 14437	&c.	c	17	73, 525	2477, 19193	&c.

(II.) We know that, if x and y be integers or multiples of the same quadratic surd, $(x+y)(x-y)$, $2xy$, x^2+y^2 are integers, and may be taken as the lengths of the sides of a right-angled triangle. It is required to find a series $u_1, u_2, u_3, \ldots, u_n$ such that the expression

$$(u_n+u_{n-1})(u_n-u_{n-1})-2u_nu_{n-1}$$

may be constant in magnitude. If we assume that this difference is alternately positive and negative, we obtain the relation

$$u_n^2-u_{n-1}^2-2u_nu_{n-1}=2u_{n+1}u_n-u_{n+1}^2+u_n^2,$$

from which, by reduction, we find $u_{n+1}=2u_n+u_{n-1}$. Consider now the series (*a*) 1, 2, 5, 12, ...; (*b*) 1, 4, 9, 22, ...; (*c*) 2, 3, 8, 19, ... In series (*a*) we have $(u_n+u_{n-1})(u_n-u_{n-1})-2u_nu_{n-1}=\pm 1$. In series (*a*) and (*b*) we have $(u_n+u_{n-1})(u_n-u_{n-1})-2u_nu_{n-1}=\pm 7$. Thus series (*a*) gives a set of right-angled triangles 3, 4, 5; 20, 21, 29; ..., in which the two smaller sides differ by unity, and we can obtain triangles fulfilling the conditions of the question by multiplying each side by 7. Series (*b*) and (*c*) give triangles in which the smaller sides differ by 7, viz., (*b*) gives 8, 15, 17; 65, 72, 97; ...; (*c*) gives 5, 12, 13; 55, 48, 73; ....

[Rest in *Reprint*.]

15548. (Professor S. SIRCOM.)—If D, E, F be any points on the sides BC, CA, AB respectively of a triangle ABC, and X, Y, Z the points in which EF, FD, DE respectively meet the same sides, then

$$(DZ.EX.FY)/(DY.EZ.FX)=-(AF.BD.CE)/(AE.BF.CD).$$

Solutions (I.) *by* A. HOLDEN, B.A.; (II.) *by* C. M. ROSS.

(I.) Let ABC be the given triangle, X, Y, Z the points where the transversals EF, FD, DE meet the sides BC, CA, AB respectively. Draw ER parallel to BC, FS parallel to AC, DT parallel to AB. Then

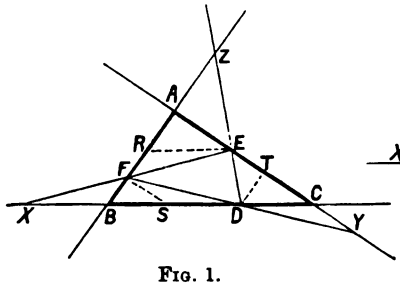


FIG. 1.

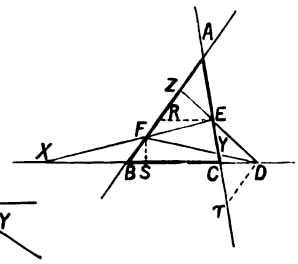


FIG. 2.

DZ/EZ = BD/RE, EX/FX = CE/SF, and FY/DY = AF/TD, from similar triangles; therefore we have

$$(DZ.EX.FY)/(EZ.FX.DY)=(BD.CE.AF)/(RE.SF.TD)\ldots(1).$$

Again the triangles ARE and ABC are similar; therefore

$$RE/EA=BC/CA.$$

Similarly SF/FB = CA/AB and TD/DC = AB/BC; therefore

$$(RE.SF.TD)/(EA.FB.DC)=1;$$

therefore $RE.SF.TD=EA.FB.DC=-AE.BF.CD$.

Therefore, substituting in (1), we have

$$(DZ.EX.FY)/(EZ.FX.DY)=-(BD.CE.AF)/(AE.BF.CD).$$

The same proof holds for any other positions of D, E, F as in Fig. 2.

[Rest in *Reprint*.]

15594. (J. J. BARNIVILLE, B.A.)—Having

$$u_1=2b^2-a^2, \quad u_2=a^2+4ab+2b^2,$$

$$u_3=a^2+8ab+14b^2, \quad u_4=7a^2+36ab+46b^2, \quad \ldots,$$

and $v_1=a^2+2ab+2b^2$, $v_2=a^2+6ab+10b^2$, $v_3=5a^2+26ab+34b^2$, ..., the scale of each series being x^3-3x^2-3x+1, prove that $u_n^2+u_{n+1}^2=2v_n^2$.

Solution by C. M. ROSS.

The scale of relation of the series

$$2b^2-a^2+x(a^2+4ab+2b^2)+(a^2+8ab+14b^2)x^2+\ldots$$

is $1-3x-3x^2+x^3$, and the generating function is

$$[2b^2-a^2+4x(a^2+ab-b^2)+(a^2-4ab+2b^2)x^2]/(1-3x-3x^2+x^3).$$

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This expression is equivalent to the partial fractions

$$-\tfrac{1}{3}(a^2+2ab-2b^2)\frac{1}{1+x}$$
$$-\frac{a^2(7-4\sqrt{3})+2ab(-5+3\sqrt{3})+2b^2(2-\sqrt{3})}{3(\sqrt{3}-1)}\frac{1}{x-2+\sqrt{3}}$$
$$+\frac{a^2(7+4\sqrt{3})+2ab(-5-3\sqrt{3})+2b^2(2+\sqrt{3})}{3(\sqrt{3}+1)}\frac{1}{x-2-\sqrt{3}}.$$

The sum of the coefficients of x^{n-1} and x^n in the several terms of this expression are equal to u_n and u_{n+1}. Similarly, the sum of the coefficients of x^{n-1} in the expression

$$\tfrac{1}{3}(a^2+2ab-2b^2)\frac{1}{1+x}$$
$$-\frac{a^2(-5+3\sqrt{3})+4ab(2-\sqrt{3})+2b^2(-1+\sqrt{3})}{3(\sqrt{3}-1)}\frac{1}{x-2+\sqrt{3}}$$
$$+\frac{a^2(-5-3\sqrt{3})+4ab(2+\sqrt{3})+2b^2(-1-\sqrt{3})}{3(\sqrt{3}+1)}\frac{1}{x-2-\sqrt{3}}.$$

is equal to v_n.

Hence, grouping together like terms in the squares of the coefficients of x^{n-1} and x^n thus found, it follows that $u_n^2+u_{n-1}^2=2v_n^2$.

15606. (Rev. J. Cullen.)—Given four vectors α, β, γ, δ, show that, if $\phi(t)=\mathrm{V}(\alpha+t\beta)(\gamma+t\delta)^{-1}$, then $\mathrm{U}\Sigma\mathrm{V}\,\phi(t_2)\phi(t_3)$ is invariable for all values of t_1, t_2, t_3, provided $t_1>t_2>t_3$. Hence obtain the equation of the plane formed by the intersection of the reciprocal cone (whose vertex is the origin) with the cylindroid determined by two given screws $(\sigma,\ \omega)$ and $(\sigma_1,\ \omega_1)$.

Solution by the Proposer.

Put $(\gamma+t_1\delta)^2=\mathrm{T}_1^2$, ...; then

$$\phi(t_1)=\mathrm{T}_1^{-2}\mathrm{V}(\alpha+t_1\beta)(\gamma+t_1\delta)=\mathrm{T}_1^{-2}(\xi+t_1\eta+t_1^2\zeta)\ \text{(suppose)}.$$

Hence $$\Sigma\mathrm{V}\phi(t_2)\phi(t_3)=(t_1-t_2)(t_2-t_3)(t_3-t_1)\,\mathrm{T}_1^{-2}\mathrm{T}_2^{-2}\mathrm{T}_3^{-2}\mathrm{K},$$

where $$\mathrm{K}=\gamma^2.\mathrm{V}\eta\zeta+2\mathrm{S}\gamma\delta.\mathrm{V}\zeta\xi+\delta^2.\mathrm{V}\xi\eta.$$

Therefore $\mathrm{U}\Sigma\mathrm{V}\phi(t_2)\phi(t_3)=\mathrm{U}\kappa$, which is independent of t_1, t_2, t_3 provided $t_1>t_2>t_3$.

The equation of the plane through $\phi(t_1)$, $\phi(t_2)$, $\phi(t)_3$ is

$$\mathrm{SK}[\rho-\phi(t_1)]=0$$

or $$\mathrm{SK}\rho-\mathrm{S}\xi\eta\zeta=0 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ (1).$$

Now, since the vector equation of the cylindroid is

$$\rho=\mathrm{V}(\sigma+t\sigma_1)(\omega+t\omega_1)^{-1}+x(\omega+t\omega_1),$$

we obtain on putting $x=0$ the perpendiculars on the generators which lie on the cone $\mathrm{S}\sigma\rho\mathrm{S}\omega_1\rho-\mathrm{S}\sigma_1\rho\mathrm{S}\omega\rho=0$, and from the above we need only to replace α, β, γ, δ by σ, σ_1, ω, ω_1 in K, ξ, η, ζ in (1) to obtain the equation of the plane.

Algebraical Note.

By A. M. Nesbitt, M.A.

To find the number of ways in which it is possible to place n letters each into a wrong envelope.

The following method of working this familiar question may be found interesting.

Take as a first approximation the total number of ways, $n!$, in which the n letters can be placed in their envelopes. This is too large, and therefore from it we subtract the number in which a is placed right and the rest anyhow, the number in which b is placed right and the rest anyhow, ...; thus subtracting in all $n(n-1)!$. But now we have taken off too large a number, and must therefore add the number of ways in which a, b are put right and the rest anyhow, and so for each and every pair: this gives the term $+\frac{n(n-1)}{1.2}(n-2)!$. Here again we have added too large a number and must compensate by taking off ${}_nC_3(n-3)!$; this in turn requires the addition of ${}_nC_4(n-4)!$; and so on. Hence the required number is

$${}_nC_0n!-{}_nC_1(n-1)!+{}_nC_2(n-2)!-{}_nC_3(n-3)!+\ldots+(-1)^n{}_nC_n0!,$$

i.e., $$n![1-1/1!+1/2!-1/3!+\ldots+(-1)^n1/n!].$$

Cor.—If there are more envelopes than letters—*i.e.*, suppose there to be $m-n$ blank envelopes—we are at once led by similar reasoning to the fact that the number of ways of putting the letters in envelopes so that none shall go right is

$${}_nC_0{}_mP_n-{}_nC_1{}_mP_{n-1}+{}_nC_2{}_mP_{n-2}-\ldots+(-1)^{n-1}{}_nC_{n-1}{}_mP_1+(-1)^n{}_nC_n,$$

i.e., $$\sum_{r=0}^{r=n}(-1)^r\frac{m!}{(m-n+r)!}\frac{n!}{r!(n-r)!}$$

or $$\sum_{r=0}^{r=n}(-1)^r m!\,n!/[r!(n-r)!(m-n+r)!];$$

so that the chance that all the letters go astray is got by substituting $(m-n)!$ for $m!$ in the above expression.

The case in which there are more letters than envelopes presents no special difficulty.

12229. (Professor Lévy.)—Un régiment marche à la cadence de 120 pas par minute; on demande quels sont les soldats qui poseront le pied droit sur le sol en même temps que la musique. Même problème en changeant la cadence.

Solution by W. J. Greenstreet, M.A.

Sound travels at the rate of 1120 ft. per second. The troops are marking time, or walking in a straight line, at 120 paces a minute, *i.e.*, at 2 paces a second, *i.e.*, each man places his right foot on the ground once in a second and his left foot half a second after. Then men at intervals of $1120k$ ft., where k is integral, will appear to the spectator to be keeping time with the band. If the time is changed, the 2 paces a second becomes 2 paces in x seconds. In x seconds sound travels $1120x$ ft. Hence the intervals above must be $1120xk$ ft.

15626. (R. Chartres.)—If C_r, D_r be the combinations of n and $2n$ things respectively taken r together, find the sum of

$$1+(C_1)^2/D_2+(C_2)^2/D_4+(C_3)^2/D_6+\ldots.$$

Solution by the Proposer.

Legendre's coefficient may be arranged

$$P_n(\cos\theta)=(D_n/2^{2n})[\cos n\theta+(C_1^2/D_2)\cos(n-2)\theta+(C_2^2/D_4)\cos(n-4)\theta+\ldots].$$

Let $\theta=0$; therefore $1+C_1^2/D_2+C_2^2/D_4+\ldots=2^{2n}/D_n$.

15198. (Professor Sanjána, M.A.)—ACA′, BCB′ are two fixed conjugate diameters of a hyperbola, and CP, CD are two conjugate semi-diameters: if AP, BD meet in O, and A′P, B′D in Q, prove that PODQ is a parallelogram, whose diagonal OQ is of fixed length and lies along an asymptote. Find also the maximum area of this parallelogram.

Solution by A. M. Nesbitt, M.A.

Taking the conjugate diameters AA′, BB′ for axes and $(x',\ y')$ for co-ordinates of P, we get the following equations:—

$$y/(x-a)=y'/(x'-a)\ \text{for AP},$$
$$(y+b)/x=(bx'/a+b)/(ay'/b)=y'/(x'-a)\ \text{for B′D},$$
$$(y-b)/x=y'/(x'+a)\ \text{for BD}.$$

Hence B′D is parallel to AP; so that OQ is a parallelogram. Also, since $y'^2/(x'^2-a^2)=b^2/a^2$, we may take $y/(x-a)=bm/a$ for AP and

$$(y-b)/x=b/am\ \text{for BD},$$

and, on multiplying up and adding, we find $(m+1)(ay-bx)=0$; so that AP and BD intersect on the asymptote $ay=bx$. [If $m=-1$, the two lines coincide with AB and may therefore be said to intersect on the other asymptote.] Hence we get, for co-ordinates of O, $[am/(m-1),\ bm/(m-1)]$. Now we may similarly take

$$y/(x+a)=b/am,\quad (y+b)/x=bm/a$$

for equations to A′P and BD, and these meet in $[a/(m-1),\ b/(m-1)]$, which are co-ordinates of Q. The difference of the abscissæ of O and Q is thus a, and this is the (oblique) projection of OQ on the x axis. The area of the parallelogram is thus $ab\sin\omega$; so that its area is constant.

QUESTIONS FOR SOLUTION

15634. (C. Bickerdike.)—*Correction.*—Question 15634 is not sufficiently enunciated, and should read:—"In the triangle ABD there are given the sides BA, BD, the included angle ABD, also BO. Required to draw the lines AO and OD so that the angles AOB and DOB may be equal."

15659. (Professor Sanjána, M.A.)—Prove that the integral

$$\int_1^0 x^n\log(1-x^n)\,dx$$

has a finite value when n is any finite positive integer; obtain the indefinite integral in this case, and hence evaluate the series

$$1/[1(2n+1)]+1/[2(3n+1)]+1/[3(4n+1)]+\ldots.$$

Examine also the case when n is infinite. [When $n=1$, 2, 3, the above series has the respective values $\frac{3}{4}$, $\frac{8}{9}-\frac{2}{3}\log 2$, $\frac{1}{16}-\frac{1}{8}\log 3-\frac{1}{24}(\pi\sqrt{3})$.]

15660. (G. H. Hardy, M.A.)—Prove that

$$\int_0^\pi e^{a\cos x}\cos(nx+a\sin x)\,dx=-2\left(\frac{d}{da}\right)^{n-1}\left(\frac{\cosh a}{a}\right).$$

15661. (R. W. D. Christie.)—Prove the following equations:—

$$(l^2+1)(m^2+1)(n^2+1)=(pqr)^2=\{l^2+l^2(q+r)+l(qr+1)+(q+r)\}^2$$

when p is any prime of form $4m+1$, all the other letters (integers) known when p is given.

15662. (H. A. Webb.)—Show that the value of the series

$$1/2^3+1/3^3+1/4^3+\ldots \text{ to infinity}$$

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differs from the positive root of the equation $3x^3+13x=3$ by less than two millionths.

15663. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Find a general expression for triangular numbers consisting of a certain digit repeated n times followed by another (different) digit repeated n times.

15664. (R. CHARTRES.)—Express $1/(r^n+1)^2$ as a radix fraction in the scale radix $=r$.

15665. (A. M. NESBITT, M.A.)—(1) If $x_1, x_2, \ldots, x_n$ be the roots of the equation $p_0x^n-p_1x^{n-1}+p_2x^{n-2}-\ldots+(-1)^np_n=0$, prove that the product of the $n(n-1)/(1.2)$ quantities of which x_r+x_s is the type (r not being equal to s) may be written as a determinant of order $n-1$ whose κ-th row is $p_{2-\kappa}, p_{4-\kappa}, \ldots, p_{2(n-1)-\kappa}$ with the convention that $p_\alpha=0$ if $\alpha<0$ or $>n$.

Example: If $n=4$, the product is $\begin{vmatrix} p_1 & p_3 & . \\ p_0 & p_2 & p_4 \\ . & p_1 & p_3 \end{vmatrix}$, and, if $n=5$, it is

$$\begin{vmatrix} p_1 & p_3 & p_5 & . \\ p_0 & p_2 & p_4 & . \\ . & p_1 & p_3 & p_5 \\ . & p_0 & p_2 & p_4 \end{vmatrix}.$$

It will be noticed that the principal diagonal is $p_1, p_2, \ldots, p_{n-1}$.

15666. (J. J. BARNIVILLE, B.A., I.C.S.)—Having $u_n+u_{n+1}=u_{n+4}$, prove that

$$\frac{1}{3.4.5.6}+\frac{1}{3.5.6.7}+\frac{1}{4.6.7.9}+\frac{1}{5.7.9.11}+\ldots=\frac{1}{180},$$

$$\frac{1.3.10}{3.4.6.7}+\frac{2.4.12}{3.5.7.9}+\frac{2.5.15}{4.6.9.11}+\frac{2.6.18}{5.7.11.13}+\ldots=\frac{1}{2}.$$

15667. (Professor NEUBERG.)—Chercher la condition pour que les équations $\tan x=a\tan(y-z)$, $\tan y=b\tan(z-x)$, $\tan z=c\tan(x-y)$ soient compatibles.

15668. (Professor NANSON.)—The locus of the meet of perpendicular planes through two fixed lines is a quadric. Show that the three quadrics thus derived from the three pairs of opposite edges of a tetrahedron have a common curve of intersection.

15669. (*Communicated by* A. V. KUTTI KRISHNA MENON, B.A.)—O and O′ are two fixed points, P any point in a curve defined by the equation $1/r-1/r'=1/c$ where $r=$OP, $r'=$O′P, and c is constant. Prove that the distance between P and the consecutive curve obtained by changing c to $c+\delta c$ is ultimately $\delta c/\sqrt{[1+3c^2/(rr')+a^2c^4/(r^3r'^3)]}$, where $a=$OO′.

[*Note.*—The Proposer desires to obtain an elegant solution of the above "Smith's Prize" Question.]

15670. (Professor COCHEZ.)—Construire la courbe

$$\rho=\sqrt{(1+\tan\tfrac{1}{2}\omega)}/(1-2\sin\omega).$$

15671. (Professor SANJÁNA, M.A.)—From the centre of curvature at every point of a central conic the two normals other than the radius of curvature are drawn. Prove that the envelope of the chord joining the feet of these normals is $x^{\frac{1}{3}}/a^{\frac{1}{3}}\pm y^{\frac{1}{3}}/b^{\frac{1}{3}}=1$, and that the locus of the pole of this chord is $a^2/x^2\pm b^2/y^2=1$, the conic being referred to its axes.

15672. (A. R. RICHARDSON.)—S is a fixed conic. One of the chords of intersection of S with any conic circumscribing the triangle of reference passes through the focus of an inscribed conic whose other focus describes a straight line. Show that the other chord of intersection will envelop a series of conics inscribed in the triangle; and find their envelope.

15673. (JAMES BLAIKIE, M.A.)—A straight line meets BC, CA, AB, the sides of a triangle ABC in D, E, F, and CB is produced to D′, so that BD′ = DC; CA is produced to E′, so that AE′ = EC; BA is produced to F′, so that AF′ = FB. Prove that D′, E, F′ are collinear without assuming any property of the hyperbola.

15674. (W. F. BEARD, M.A.)—TP, TQ are tangents, and TAB a secant, to a circle; any circle through AB cuts BP, BQ at C, D. Prove that PQ bisects CD.

15675. (R. TUCKER, M.A.)—ABC is a triangle and O_1, (O_1') are the centres of the circles BΩC, (BΩ′C) respectively. Similar points are taken for the other angles of the triangle. Prove that

$$\Sigma(O_1A)^2+\Sigma(O_1'A)^2=\tfrac{1}{4}k(\operatorname{cosec}^2\omega+8)-3R^2 \quad (k=\Sigma a^2).$$

15676. (C. E. YOUNGMAN, M.A.)—Construct (geometrographically) on a given base a a triangle having $a^2=4bc$, with its Brocard angle a maximum. [*Op.*: $12R_1+6R_2+10C_1+9C_2=37$, or simpler.]

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8747. (Professor HAUGHTON, F.R.S.)—The law of cooling of the Sun is $dT/dt=aT^3-bT$. Integrate this equation, and show the relation between Sun heat and time.

8761. (D. BIDDLE.)—Two points are taken at random in the base and one point on the curved surface of a right cone of given dimensions. Find the mean area of the triangle formed by joining them.

9123. (Professor NILKANTHA SARKAR, M.A.)—A smooth heavy elastic ball impinges on a given wedge, resting on the horizontal plane in which the ball moves. Prove that the condition that, after impact, the ball may slip up the plane is independent of the coefficient of elasticity between the ball and the wedge.

9486. (E. B. ELLIOTT, M.A.)—Two events A, B are not independent; but (ab), (ab') denote the chances that, if A happens, B will and will not happen respectively, and $(a'b)$, $(a'b')$ respectively the chances that, if A does not happen, B will and will not happen; while (ba), (ba'), $(b'a)$, $(b'a')$ have like meanings with regard to B and A interchanged. Prove that

$$[(ab)/(ba)][(a'b')/(b'a')]=[(ab')/(b'a)][(a'b)/(ba')].$$

9827. If $U=0$ be the homogeneous equation to a curve of order n and $\Delta\equiv x_2\,d/dx_1+y_2\,d/dy_1+z_2\,d/dz_1$, show that the discriminant of $\lambda^nU_1+\lambda^{n-1}\mu\Delta U_1+\frac{1}{2}\lambda^{n-2}\mu^2\Delta^2U_1+\ldots$ only differs by a factor from the result of substituting $\begin{Vmatrix} x_1 & y_1 & z_1 \\ x_2 & y_2 & z_2 \end{Vmatrix}$ for α, β, and γ in the tangential equation to the curve.

9851. (Professor EMMERICH, Ph.D.)—Solve the equations

$$(x+2)(y+2)(z+2)=3, \quad (x^2+4)(y^2+4)(z^2+4)=100,$$
$$(x^3+8)(y^3+8)(z^3+8)=504.$$

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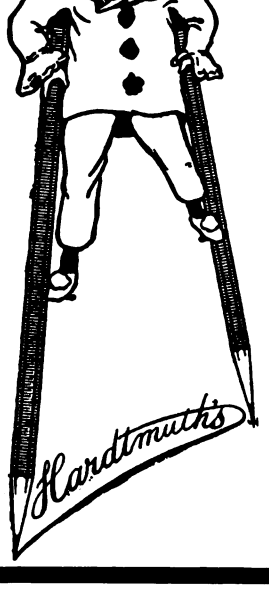

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5. PROFESSIONAL PRELIMINARY EXAMINATIONS.—These Examinations are held in March and September. The Spring Examination in 1905 will commence on the 7th of March.

6. INSPECTION AND EXAMINATION OF SCHOOLS.—Inspectors and Examiners are appointed by the College for the Inspection and Examination of Public and Private Schools.

PRIZES.

Diploma Examination.—The following Prizes will be offered for competition:—Theory and Practice of Education, £10; Classics (Greek and Latin), £5; Mathematics, £5; Natural Science, £5. The Doreck Scholarship of £20 will be awarded on the results of the Christmas Examination.

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G. L. GOMME,
Clerk of the London County Council.

Spring Gardens, S.W.
November, 1904.

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The Educational Times.

Lessons from Norway.

THE Board of Education has opportunely published the Norway section of a most instructive Report on Higher Schools in Scandinavia prepared at their desire by Mr. J. S. Thornton. "The extract," to quote the circular letter of the Board, "gives an account of the methods of examination and inspection of secondary schools that have been adopted in Scandinavia for a purpose similar to that which the Consultative Committee have in view in making their proposals" for a system of school certificates; "and the Board are of opinion that information regarding this system of awarding school certificates in Norway and Sweden and particulars of its actual working will be of immediate interest and value to those bodies which are considering the questions raised by the proposals of the Consultative Committee for the establishment of a similar scheme." About that there can be no two opinions. The Report is most welcome.

Mr. Thornton, of course, takes a wider outlook. His materials furnish "a comparative account not only of the leaving examinations themselves and their working, but also of their value as an instrument in the hands of Government for the spread of sound education, and as a means of harnessing in the State service schools of varying origin and methods that are nevertheless working efficiently towards the same goal." Incidentally, too, he finds opportunities "for showing the relative merits and demerits of the different kinds of schools, the manner in which they supply each other's defects, their relative cost, and the amount of favour they win from the population around." This terse summary of contents is enough to show the opportuneness and the value of the information that Mr. Thornton has industriously collected and marshalled in his Report.

It is not necessary to go into details here: we must refer our readers to the Report itself, which is but a matter of thirty-two pages—that is to say, the Norway portion now available. We wish simply to draw particular attention to the most outstanding feature of more immediate interest. "It may be stated broadly (with some exceptions to be afterwards noted) that education authorities, central and local, do not seek a monopoly, but welcome schools of other origin to a position co-ordinate with their own schools." "State recognition consists in the right, confined to recognized schools, of holding the State leaving examinations within their walls." We may quote the substance of the conditions of State recognition (§72 of the Law of 1896):—

(1) That the length of the school course and the hours of instruction be found sufficient.

(2) That instruction in the various subjects be given to a certain extent (set forth in Chapter II. of the Law).

(3) That the staff of the school has on the whole such an education as is required from such as are appointed to the service of the higher schools of the State.

(4) That teachers' salaries be approved by the Department. (In the yearly return the head master states the number of teachers, the total amount paid in salaries, the highest salary paid, and the lowest.)

(5) That the buildings, furniture, and apparatus be suitable and complete.

(6) That at least one set of pupils have been presented at the leaving examination and have passed it satisfactorily.

(7) That the instruction in the school and the leaving tests be submitted to the control appointed by the Department. (Mr. Thornton shows the nature of the present control in an account of the Undervisningsraad, or Educational Council, and of the way in which the examinations are conducted).

(8) That every year there be sent in to the Department a report of the school work; with any report or prospectus issued by the school.

The State schools do not crowd out the private schools, but they constitute a model or standard for them in point of buildings, equipment, and staff. The private schools, on the other hand, while conforming to public standards and supplying "at slight cost to the State public needs in a measure quite as full as the public or State schools," possess "greater freedom and initiative."

Thus it is recognized in Norway, as it has been recognized by thoughtful educationists in unofficial spheres in this country, that the private schools "by the variety of their methods introduce fresh life and vigour into all educational work." Indeed, "it has become almost an axiom in the North of Europe that a balance of schools, public and private, most conduces to the welfare of the State." We have steadily held that in the present transition movement in this country the private school that deserves to be safe will be perfectly safe; and we cannot imagine that the Board of Education, which has sought out and now circulates such an example as is contained in Mr. Thornton's Report, will seek to cripple private schools either by fostering undue competition or by imposing too onerous conditions, or that Education Authorities will fail to appreciate

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the importance of the Norway example. True, the difference of national temperament and tradition must always be allowed for in such comparisons; but these Northern neighbours of ours are too closely akin to us to permit any anticipation of adverse discriminations on this score, and a successful example of half a century is not lightly to be set aside. Nor can we doubt that the enlightened example of Bedfordshire, which has frankly adopted the Danish point of view in all essentials, will exercise great influence on other Education Authorities, as well as on public opinion generally.

The greatest danger, perhaps, lies in the official tendency to grasp everything too tightly, with the best intentions no doubt, but still with undue self-confidence. In view of the Norwegian experience—and, we will repeat, the English experience—of the initiative enterprise of private schools and the reactive influence on public schools and on the intellectual interests of the nation, it would obviously prove a fatal blunder if public Education Authorities, high or low, were to shackle the full freedom of the private schools. "So far as I know," said Rektor D. F. Knudsen, when he was Expeditionschef (Permanent Education Secretary), "there is no nation that has been willing or able to dispense with private initiative, which is like a free man as compared with one bound hands and feet, like a creature that moves by the side of one fast chained to the ground." The greater freedom that has recently been admitted in the elementary system affords encouragement. But, as we have already said, very much depends upon the attitude and the action of the private schools themselves.

NOTES.

We have pleasure in publishing in another column a letter from Mr. W. E. Hipkins, of Edgbaston, which recognizes in a practical way the importance of after-school study, so strenuously discussed by Mr. Bevan last month and this. Mr. Hipkins, it will be seen, proposes to offer a monetary reward to every one of his employees—over 2,000—that secures an elementary certificate at the local technical schools, and larger rewards for certificates in the higher stages. The difficulty is, as Mr. Hipkins points out, that "the commercial conscript, surrounded by fresh associations, is apt to take too narrow a view of his position and prospects, and to regard the continuance of study as a loss of time." The competing attractions are numerous and strong, and the return appears to be doubtful and remote. Still, the force of successful examples will tell continuously, and it is to be hoped that other employers of labour will encourage the movement in some such practical mode as Mr. Hipkins has adopted. Such enlightened generosity is of the kind that blesses him that gives as well as him that takes.

The West Riding Education Committee has just issued an extremely interesting report, an outcome of the attendance of a group of art masters of the West Riding at the Geneva School of Industrial Arts for six weeks of last summer. The opinions of the professors in different branches are necessarily conditioned by the shortness of the visit; but they are pointed and instructive. On the other hand, the art masters give an interesting account of the school, and pass their own criticisms on the various departments. Apart from special technicalities, the main result is a vivid sense of points of contrast between the Genevan and our own systems of art teaching. The co-ordinated scheme for the teaching of drawing in Geneva is described in some detail, and suggestions are submitted for the consideration of the County Education Committee. The visit has evidently proved very fruitful for the visitors, and the information obtained will, no doubt, largely stimulate, and tend to mould, the development of art teaching in the North, and perhaps more widely.

Prof. H. R. Porter, the Chairman of the Yorkshire Section of the Society of Chemical Industry, has just been publicly making certain criticisms on technical education that some other people have been making privately. He was discussing the relation of the University to industry, and he contended that in England we "have not succeeded in enlisting sufficiently the highest scientific ability in the cause of industry." He very properly laid stress on "the lack of inducement to adopt technical industry as a profession," which is "largely due to the scientific ignorance of manufacturers and business men, to most of whom the chemist is merely a man that can wash bottles and make an analysis." The Bädische Soda- und Anilin-Fabrik knows better. Prof. Porter laid it down deliberately that "it is no part of the work of a University to teach the manual dexterities of a trade beyond the point necessary for successful study" of the theoretical principles, which should be carried to the highest standard attainable. "The ordinary evening-school technology," he said, "may in most cases be dismissed as almost a pure waste of public money as regards the improvement of trade—the sowing of seed in untilled and often unfertile soil"; and there is a good deal lacking, if not in the ability, at any rate in the training, of technical masters. Prof. Porter also has his doubts about the present system of scholarships: would the money not be more fruitfully used in a general lowering of fees, "so as to make the struggle a more open one"? In any case, he would like to see the scholarships dependent less on mere examination results and more on the opinion of the teacher. These views may require modifications, but it is well to have them ventilated.

The inaugural lecture delivered by Dr. Firth, the new Regius Professor of Modern History at Oxford, was marked by a breadth of view and an incisiveness of criticism that are of excellent omen. If he seemed to some to go a little too far in his demands for what Milton called a more "complete and generous education" in the History School, by extended attention to English literature and social and economic history, there was no harm in the excursion: the limits can readily be accommodated in practice. From the professorial point of view, the attainments of the History candidates may appear rather small and thin; but at any rate the school opens out useful work for students that might not make so

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much out of any other University course. At the same time, a man that has not actually worked out a period, or at any rate an episode, from the original documents, knows precious little of the meaning of history, and little imagines how much traditional representations will be modified by detailed and unbiassed study of the masses of materials yet unexamined. It seems hopeless to set down the whole School to first-hand work, but First Class men might well be required to show familiarity with a limited set of originals. Prof. Firth's programme is admirably practical; yet his student fellow-workers must probably be First Class men and post-graduates, at least to begin with. He has undoubtedly stirred the dry bones in his own department, and raised fresh hopes for the study of history at Oxford.

In the *Monthly Review* for November Mr. F. Legge stirs once more the puzzling historical question of "The Secret of the Templars." He does well to remind historians of "La Doctrine secrète des Templiers," by M. Jules Loiseleur, the Orléans archivist, which "contains, beside a clear and temperate statement of the reasons which induced M. Loiseleur to conclude that the Order of the Temple possessed a secret doctrine in contravention of the faith of the Church, the evidence in full of three Preceptors and three other Knights of the Tuscan branch of the Order, over whom neither the King of France nor the Pope of Avignon were likely to have had any influence." This evidence is notarially attested to have been given publicly and without compulsion or torture ("sine coactione aliqua vel tormentis"); but, even admitting a full report and an honest attestation, the very words mark the exceptional nature of the case, and forbid general inferences. However, Mr. Legge uses the evidence of this Florence Commission together with the evidence before the similar Paris Commission to ground a theory that the Church acted under the belief that the chiefs of the Order of the Temple were undermining the faith of their subordinates by Manichæan offers of indulgences to save them in the next world and of "absolute freedom from all moral and religious restraint in this world into the bargain."

We cannot but think that Mr. H. C. Lea is in the right in holding that there was no "secret" at all. Forms of initiation may have varied, some initiates may have been advanced in degree, and perversions of established doctrine may have been mooted by ignorant or reckless initiators: a systematic conspiracy of anti-Christian tenets for ulterior objects disastrous to the Church is a very different matter. There is no getting away from the impecuniosity and rapacity of Philippe le Bel, the potency of the Inquisition, and the subservience of Clement V. to the French King. It was the King, not the Pope, that started the movement; it was the King that either directly or indirectly carried out the suppression of the Order. If the Order was so thoroughly corrupt, the Pope did not know it; nor did anybody else, excepting always William of Nogaret, the Keeper of the King's Seal. It is a pity that Prof. Döllinger did not leave his treatment of the subject in complete form. But he says this ("Historical and Literary Addresses," page 206):

Previously to October 13, 1307, the day on which the great blow was dealt, no mention had been made of this assumed corruption and degeneracy of the Society. I find, on the contrary, in the literature of the time and of the period immediately following, even until as late as the beginning of the fourteenth century, that authors who sharply condemn the degeneracy of the ecclesiastical communities of the day give evidence in favour of the Order of Knights Templars, either negatively, by omitting any mention of them in the enumeration of degenerate Orders and monastic bodies, or positively, by holding them up as a pattern to others.

The Papal motive must be sought, not in inferences of a secret anti-Christian conspiracy, but in the relations of the Pope to the King of France.

SUMMARY OF THE MONTH.

The report on the work of the Department of Technology of the City and Guilds of London Institute for 1903–4 points out that the encouragement offered by the Board of Education to the teaching of technology is helping to increase the number in the Institute's registered classes. There is a decided improvement on last year. The number of students in November last attending classes in the United Kingdom was 41,089, as against 38,638; and the number of examinees was 20,051, as against 17,989. The closer connexion of the work of the department with the Board of Education is shown also not only by the recognition of the City and Guilds of London Institute as an organization for the inspection of classes in technology, manual training, and domestic economy, but also by the stamping by the Board of Education of full certificates granted by the Institute to students who pass in technology and have "qualified in the cognate science or art subjects required by the Institute." The question of arranging courses of instruction adapted to the requirements of operatives engaged in shipbuilding is under consideration; it is intended to extend the syllabus in ship carpentry and joinery so as to make it suitable for artisans engaged in other branches of the industry. It should be noted that the Department of Technology of the Institute occupies an intermediate position between the Central and Local Education Authorities and the several trade societies. The latter bodies have shown a growing interest in technical instruction, and year by year the department has grown into more intimate relationship with these trade organizations.

From the thirty-sixth annual report of the Oxford Delegacy of Non-collegiate Students it appears that the undergraduate members numbered in August last 179, being two in excess of the preceding year, and that there were 75 matriculations during the year, as against 67 in 1902–3, besides 17 names replaced. Twenty-one took Honours in the Final Schools, and the average of passes was over 68 per cent. The Delegates, it may be observed, admit without examination students in any special branch of study who do not desire to pass through the arts course, on producing evidence of their ability to prosecute their studies with advantage. The disciplinary report is satisfactory.

The Cambridge Local Examinations and Lectures Syndicate in their thirty-first annual report on the local lectures state that the number of centres in active work in the session 1903–4 was 102, as against 96 in the previous session. The number of courses delivered was 119, as against 109, and the number of lectures 1,154, as against 1,050. There was no increase in the number of short courses, but the full courses, with their accompanying examinations and certificates, increased from 67 to 77. The average number of persons attending the lectures was 12,986, as against 12,626 in the session 1902–3. Considerable experience has been gained of the working of the new Education Act as it affects the local lectures. For the first time Local Authorities have had the power of subsidizing lectures in history and literature as well as in science, and it was naturally hoped that they would have given more support to the movement than in former years. "The result has been disappointing."

At Radley College the "Rudens" of Plautus was performed (November 1 and 2) with great success, K. W. H. Baker especially distinguishing himself as Labrax, the slave-dealer. The Rev. J. H. Kirkby, one of the assistant masters, painted the scenery very effectively; and the Rev. F. J. Stone, also an assistant master, composed attractive music.

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PROF. BOSANQUET delivered the opening lecture of the session to the University of St. Andrews Education Society on "A Great Educationist of the Nineteenth Century"—the late Mr. T. G. Rooper, H.M.I. An enthusiast in all that concerned the education of the people, Mr. Rooper was not satisfied to let things go on in their old grooves. He was a field botanist, a field geologist, a local antiquary, and he inspired the teachers of his first district in Northumberland with his own interests, and thereby widened the whole scope and influence of the schools. He had the genius of tact. His earliest success was seen in the improvement of methods of teaching geography. He made his mark in Bradford by the impulse he gave to the development of manual training. He was not satisfied with suggesting—he began with his own hands. After his official work was done for the day, he set himself to work with a class of pupils, and in all that they made together he kept steadily before himself and them the formative and true educational value of such training. Horticulture as a branch of general education was another subject to which he gave a great impetus by his own interest and enthusiasm. It is, perhaps, to him that the wide-spread cultivation of school gardens as part of the work of both public and private schools is largely due. He held strongly that by all such subjects as physiography, manual training, horticulture, school work was really made more educative. It was in the filling up of the hours of school with interest and occupation that he found the secret of good discipline. Admiral Collingwood in his ships abolished corporal punishment by making it unnecessary. His men were always busy and happy. The same success could be achieved in the school on the same lines. Mr. Rooper's wonderful tact and organizing power were shown in other ways at Southampton, where he succeeded in transforming an old endowment which was being misused into the splendid Hartley Institute. Education was not only his work, but his play. His holidays were spent in visiting foreign schools and gathering fresh ideas. His relaxation from routine he found in the byways of education. The subject was always with him.

DURING a tour through Canada (says the *Morning Post*), Dr. T. C. Fry, the Head Master of Berkhampstead School, had many opportunities of observing the unhappy fate of the British emigrant, who, chiefly because of the lack of preliminary training, drifts into the "remittance man" class or succeeds only in losing his money. In order to prevent such a fate overtaking the Berkhampstead boys who emigrate to the West he decided to establish a training institution in connexion with his school. A square mile of land was purchased near Red Deer, the market town of one of the very best mixed farming districts in Alberta. A comfortable farmhouse, with the necessary outbuildings, was erected on the "section," stock for dairy purposes was bought, and shares taken in the Government "creamery" at Red Deer, and land was prepared for growing wheat, which is a successful crop in all parts of Northern Alberta. Thus the Berkhampstead Farm came into being. It was arranged (1) that only Berkhampstead boys should be received there on leaving school, so that the tie of *esprit de corps* might not be broken, and (2) that a premium of £50 for two years' training should be charged, wages of from £2 to £3 a month being paid to pupils as soon as they had become efficient workers. The age limit is eighteen, and only those who are likely to make steady farmers are taken. Since its institution the school farm has had half a dozen pupils—many requests from boys at other schools have been refused—and it is certain that the number will increase year by year. As yet the farm does not pay its expenses, but when the whole of the arable land is broken and it is fully stocked there is no reason why it should not be as profitable as any of the similar undertakings in the neighbourhood. No prairie farm can be expected to show a profit on the amount invested until the third year. Much kindly interest has been shown in the experiment by the Red Deer people, and McGill University has given the farm a good selection of modern books for winter reading. So far all the pupils have done well.

THE Archbishop of Tuam the Most Rev. Dr. Healy), speaking (November 8) on the Irish University education question, said (*Irish News*):

Not only has the system, as a whole, been condemned by all the statesmen that have had any share in the government of Ireland for the last thirty or forty years, not only has it been condemned by the Royal Commission, but it has been condemned, and emphatically condemned, by the Senate of the Royal University itself. I think that not only is it a lamentable and a deplorable thing, but I might say it is almost a shameful thing, in the face of all these strong facts, known to the whole community, that the Government should leave things *in statu quo* not only in an unsatisfactory, but in, I might say, an intolerable, position. They cry out "*Non possumus*; we cannot do it until all Irishmen agree together in pointing out the lines on which it should be settled." Was there ever a more lamentable confession coming from statesmen at Westminster who undertake to govern this country? I hope the day will come—and that the day will come soon—when all that is best in Ireland of every class and creed will unite together for the good of the country. If we are able to settle these questions ourselves which they confess that they cannot settle, then the whole *raison d'être* of government from Westminster goes to the wall. They will have no moral claim to govern us. They say: "We cannot govern you." Then let us govern ourselves. I hope the day will come when we will be able to do it. I believe it is coming. I was glad to see signs recently that it was coming; that some of the best and most intelligent and largest-minded are coming, so to speak, to meet the popular party half-way. When that day comes, depend upon it it will be a great day for Ireland.

THE School Nature-Study Union held its first monthly meeting for discussion at the College of Preceptors (November 18), Mr. C. B. Gutteridge, M.A., in the chair. Miss C. Von Wyss, of the L.C.C. Day Training College, read a paper on "What is Nature Study?" A spirited debate followed.

WE regret to record the death of the Rev. Dr. Fowler, President of Corpus Christi College, Oxford, after a lingering illness. His text-books on logic have been widely appreciated.—The Rev. Albert Watson, Fellow (late Principal) of Brasenose, who is said to have been greatly upset by the death of Dr. Fowler, was found dead in bed next morning. Well over twenty years ago he published an esteemed edition of "Select Letters" from Cicero's correspondence (Clarendon Press).

UNIVERSITIES AND COLLEGES.

(*From our own Correspondent.*)

Oxford.

WE have had a busy month, and at the time of writing we are just about to be plunged once more into the great Greek controversy. There were many who thought that the matter would be allowed to rest for a while or even that we should wait to see "how the cat jumped" at Cambridge, but the "Anti-Greeks" (as, despite their protests, they are still called) have determined that Oxford is to lead the way. So far, however, we have been spared the usual warfare of pamphlet and squib, but the organizers of the two parties have been very busy, and the statute comes before Congregation on November 29. It is interesting to note that the Lord Chancellor, in giving away the prizes at the Magdalen College School, expressed himself strongly in favour of Greek, and regarded those who would sunder Latin and Greek as heretics.

We have just lost from our midst one of the most familiar of Oxford figures in the person of Dr. Fowler, the President of Corpus—"Tommy Fowler" as he was familiarly known even to the undergraduate. He was a Head of the old school, erudite in his especial subject, most painstaking in university and college business, full of kindliness and simplicity, and yet with a certain naïve dignity of his own. His little peculiarities and foibles formed the theme of many stories more or less true, but he had no enemies. His death was followed by that of Mr. Watson ("Toby Watson," as he was styled) who was Principal of Brasenose from 1886 to 1889. So slowly but surely the old race of Heads is passing, though in Dr. Bellamy we still have a notable representative.

The Rhodes benefaction has set a good example—or, to put it more correctly, the Rhodes Trustees have both in their corporate and public capacity done so. In the first place, as trustees they are to give £1,000 (£200 for five years) to assist the University in retaining the very eminent abilities of Dr. Ritchie as Reader in Pathology. It will be remembered that at one time it was rumoured that Dr. Ritchie was to be made Regius Professor of Medicine, the truth being that this seemed one of the only ways of keeping so good a teacher for the Oxford Medical School. However, the idea of using a Regius Professorship in this way did not win general commendation, and there were no dissentients when Dr. Osler was appointed to the post. Now we are to have both Dr. Osler and Dr. Ritchie, and, with professors like Messrs. Gotch and Arthur Thomson, the Oxford Medical School should more than hold its own. In the second place, Mr. Alfred Beit, one of the

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Trustees, has offered to endow a Professorship of Colonial History and to enable other teaching to be given in the subject. The announcement has already caused considerable excitement among the teachers of History, and we are already wondering whether among their number exists one qualified to fill the professorship. Such a professorship is indeed the natural corollary to the admission of Rhodes Scholars from the colonies. Will the German Emperor now proceed to endow a Professorship of the History of the Fatherland?

The inaugural lecture of the new Regius Professor of History —containing, as it did, a severe criticism of our much vaunted History School—came as a rather unpleasant surprise, and he set us all talking: both those of us who know anything on the subject and those who believe that whatever is is wrong. Whether Prof. Firth's view that the History School is meant to be a training school for the production of historical writers is the true view it is not our place or purpose to discuss; it is, at any rate, the view apparently held by our new official head in the department. Yet, after all, the number of those who proceed from the History School to sit down and become historians is not large, and the School probably does much more service by the cultivation of general historical knowledge.

We have had lately several distinguished visitors. On Monday, November 14, Lord Rosebery unveiled the statue to Lord Salisbury at the Union, and delighted his hearers both by his power of critical analysis and wonderful gift of finished oratory. In the evening he was at his best in his reply to the toast of "The Empire," as proposed by the Rector of Exeter. Then, at St. Mary's, we have had as preachers the Bishop of Worcester and the Bishop of London—both most popular in Oxford. In the case of the former sermon considerable dissatisfaction was openly expressed that the undergraduates' gallery was largely filled with ladies—who were admitted, so it is said, before the regulation hour.

In matters athletic University won "the Fours" after early defeating Balliol (the former holders) in the first heat, then Magdalen, and eventually Merton in the final. It is rumoured that the Trial Eights ought to be above the average, and that old "blues" will this year row in them. The Rugby team had been doing great things until they met Richmond, and so had their record broken. The team has some fine players, but there are weak spots, and the absence through accident of Cartwright from the forwards has made enormous difference. The Association XI. is fair, the hockey team rather unfortunate, and the golfers hardly up to the high average of some of our recent teams.

(*From our own Correspondent.*)

Cambridge. A CURIOUS sidelight is thrown upon the working of the Education Act by the report of the Local Lecture Syndicate. High expectations were formed that the Local Authorities would eagerly seize the opportunity of subsidizing the lecture system, but the business instincts of the various educational bodies seem to induce them to buy their wares locally. In some centres grants in aid were made to various local centres, but now these have been in many cases withdrawn; the claims of elementary education are paramount, and—be it whispered with bated breath—perhaps the common sense of the common councillor has detected the fact that lecturing to large audiences is not the only way of instilling knowledge.

We have had a Council election, the manner whereof is as follows. Certain unknown persons issue lists of those for whom they request the electors to vote; an unknown body representing what is called the other side in university politics issues a corresponding ticket with diverse names, save and except that the most popular names occur on both tickets, just to show that selection is entirely by merit. Then the voter copies down accurately upon cards the names found upon his party ticket. Dr. Chase and Dr. Keynes, being upon both tickets, headed the poll; Sir Richard Jebb and Prof. Darwin represented the professors; Dr. Mollison, Mr. Parry, and Mr. Shipley the ordinary members of the Senate. As four of the successful candidates have had experience of the work of a college tutor, we may hope to see their humanizing experiences translated into corporate action.

The Lectureship in Russian is to be continued. This valuable institution is hardly as well known as it deserves to be. The War Office people hold out great inducements to Army men to study this language, and when our new military scheme is in working order we hope to be able to send out candidates not only well grounded in military subjects, but equipped with educational extras which will ensure a higher rate of pay. Although the general scheme under which the University is to supply commissioned officers to the service has long been spoken of, yet the detailed rules are still non-apparent. Waste of time and waste of money result. The War Office would require a reasonable start from the common snail.

The Anti-Greek report is out. It is sublime—thirty-five pages quarto, including appendices. Paraphrased, it runs thus:—"We wish to abolish Greek as a compulsory subject; we have consulted the schoolmasters. They would allow a dispensation in cases where a hardship would otherwise be caused." Let us have no invidious distinctions, say the Syndicate; away with Greek in the Little-go (it must follow in the General). The Classical Tripos is shrinking, Greek will vanish, and we shall all be happy. Speaking quite seriously, there may be excellent reasons for abolishing compulsory Greek at Cambridge, but, in the language of the law, the verdict of the jury is in this case all against the weight of evidence put before us in the report.

The schedule of the proposed first part of the Little-go gives eight papers—two each in Latin, Greek, French, and German, the second paper in modern language including translation into that language. Two languages are to be taken up, of which one must be Latin. Instead of taking the two papers in one modern language the candidate may take the first or translation paper in each of two languages. Now hear the schoolmasters: by a memorandum they authorize their delegates to emphasize the weight attached by the Conference to the maintenance of a high standard in both languages simultaneously, and not in one only. The exemption from Greek is to be for all, say the Syndicate. Eight out of fifty-five members of the Head Masters' Conference agree with them, forty-seven do not.

"Are you in favour of substituting a single modern language for Greek?" To this question out of fifty-four Head Masters thirty-six answer No, and a further seven Yes, but two with qualifications. One point stands out prominently in the discussion—that the Syndicate seize with avidity upon any evidence adduced by the Head Masters in favour of their plan, but they fail to see that it is for the universities to set the standard of education and for the schools to follow. As long as the colleges pay such exaggerated deference to reckoning their greatness on a *per capita* basis so long will the schoolmasters be our masters. A most interesting appendix gives an estimate of the numbers sent to the universities by the various schools in the last two years. The chief items are as follows:—Eton, 128; Harrow, 112; Marlborough, 82; Rugby, 78; Charterhouse, 61; Clifton, 69; Cheltenham, 55; Uppingham, 66; Haileybury, 47; St. Paul's, 49. All the private schools account for no more than 119.

The discussion will be held on December 1 and 2. A lively debate is expected.

Our football teams have been doing fairly well: the Association XI. has maintained a high level of play all through the season; the Rugby XV. began life as a despised side, but is now quite respectable, though some of the most valuable players have been put aside by hard knocks. On November 21 a fairly strong team representing the West of Scotland Club came with hopes of an easy victory, but returned rather decisively beaten by 55 points to 0. Those who have wagered precious bullion on the chances of an Oxford victory are now looking up trite adages to express their sentiments.

On the river sleet and hail and fog. A boat coming in with a battered bow was reported to have suddenly come upon a bank of fog, but it is authentically stated that the real obstacle was a solid odour in Barnwell Pool.

The electric trams are going through the Backs: they would be allowed through the colleges if the bids were high enough,

In politics things are moving. The tariff reformers are organizing stealthily under another name; the Liberals have had the inspiring aid of Mr. Asquith; and the Conservative caucus is deliberating how to get rid of Sir John Gorst. Term ends on December 9, and we shall be glad.

London. THE Senate has approved the following two years' course of study for such students at the Day Training College as have not passed an Intermediate Examination:—FIRST YEAR COURSE (*General Education*)—(1) English Composition, Grammar, and Literature, including an adequate study of the classical writers of Greece and Rome in literary translations; (2) elementary Mathematics (including Arithmetic) taken to a standard rather less than that of the University Intermediate Examinations; (3) a modern foreign language, or, in the case of qualified candidates, Latin; (4) Geography, Nature Study;

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(5) English History; (6) Drill, Drawing, Needlework, Voice Management and Enunciation.—SECOND YEAR COURSE (*Professional Education*).—I. Theory and Practice of Education:—Mental Development; logical processes as exemplified in the instruction of children; educational ends; government and conduct of a school; the assimilation of knowledge and order of its acquisition; co-ordination of studies; attention and interest; Method (1) General, (2) Special (*a*) Reading, (*b*) Writing, (*c*) Arithmetic, including practical exercises in Weighing and Measuring, (*d*) the Mother Tongue, (*e*) Geography, (*f*) History, (*g*) Nature Study, (*h*) Needlework, (*i*) Drawing (including Brushwork); Practical Training in a School—the observation of teaching; preparation of teaching notes; the giving of lessons under supervision; criticism and demonstration lessons. II. History of Education, treated in relation to the work of some one great educator. III. Blackboard Drawing, including the preparation of sketch-maps, diagrams, and rough drawings to illustrate lessons. IV. Music, Voice-management and Enunciation. V. School Hygiene. Elements of Hygiene—Ventilation, Warmth, Light, Cleanliness, Exercise, Rest, Food and Drink, Clothing, Infection and Contagion, Simple First Aid.

From the annual report of the Board to promote the Extension of University Teaching, just presented to the Senate, it appears that the work conducted under its direction is making substantial progress. The number of University Extension courses delivered during the past session was 179, as against 167 in the preceding session. The number of sessional courses was considerably larger than in the previous year; thus the tendency noted in the last report towards greater continuity in the work at the several Centres is still observable. The Holiday Course for Foreigners organized by the Board during the summer was attended by 208 students, mostly teachers. Of these 126 were men and 82 women. They were drawn from fifteen foreign countries, the largest contributor being Germany, Denmark being second, and France third. The Senate have authorized the Board to arrange a similar course annually. The number of candidates for School-leaving Certificates has more than doubled since the first examination was held in 1903. The "Leaving Certificates" of the University have been recognized by the Army Council as qualifying candidates to attend the Competitive Examination for entrance to the Army. In addition to conducting the inspection of a number of schools, the Board prepared during the past session reports (1) on the modern language teaching in about forty schools for the London County Council, (2) on the provision for secondary education in the Borough of Croydon for the Croydon Education Committee, and (3) on the secondary schools and the provision to be made for secondary education in Hertfordshire for the Hertfordshire Education Committee.

Arrangements have been made by which, during the coming session, classes will be maintained at the Goldsmiths' Institute, New Cross (recently presented by the Company to the University), in the following subjects:—Mathematics, physics, chemistry, engineering, building trades, art, and domestic economy, besides a few miscellaneous classes. In addition to these or similar classes the Senate will establish in the autumn of 1905 a day training college, in respect of which scheme they have secured the co-operation of the County Councils of London, Kent, Middlesex, and Surrey, and of the Borough Council of Croydon.

Dublin. EARLY last year an appeal was made for a fund for the development and better equipment of the science schools in Trinity College. Lord Iveagh offered to provide all the estimated building expenses (£34,000) conditionally upon the amount required for annual upkeep being obtained by public subscription. For the latter purpose, a capital of £78,000 invested at 3½ per cent. is required. The committee in charge of the fund now announce that of this amount £15,886 has been subscribed or promised, a site and designs have already been prepared for a new physical laboratory, and building operations will begin before the end of the year. The committee in making an earnest appeal for further subscriptions point out that the next most urgent need of the University is the development of the School of Botany and Plant Physiology.

A special school for candidates for the Army has been opened in Trinity College. Lectures will be delivered in military topography and engineering, military law and administration, and military history and strategy. In addition to the theoretical part of the work, the military authorities will give students every facility for instruction in the practical side of their profession. It is calculated that the expenses of living and of education at Sandhurst are nearly twice as great as in Trinity College.

Durham. THE Bishop of Durham, sitting as Visitor of the University, gave judgment on an appeal by Miss Cadell, a lady doctor, against a decision of the Warden, requiring that she should withdraw and express her regret for certain letters before being permitted to offer herself again for any examination held by the University. The appellant claimed to be allowed to sit for the Final Examinations for M.B. and B.S. without withdrawing and apologizing for the letters in question, His Lordship gave judgment to the effect that the letters contained "charges of partiality and injustice" against the accredited Examining Board in Medicine, and that "the appellant should not be admitted to examination within the University of Durham until she had withdrawn the offending letters and had expressed her regret for having written them."

Manchester. THE report of the Council shows that the Faculty of Theology has made a successful start with an entry of twenty students studying for the B.D., besides a number of others taking classes in the Faculty. Courses of lectures have been recognized in the following institutions:—The Scholae Episcopi, the Lancashire Independent College, the Wesleyan College, Didsbury, the Baptist College, Rusholme, the Unitarian Home Missionary College, and the Moravian College, Fairfield. By the assistance of a generous friend of the University, who desires to remain anonymous, and who has promised £400 annually for five years, it has been possible to institute Chairs of Biblical Exegesis and Comparative Religion in the University. In the arrangements for the Faculty of Theology the University has acted in consultation with representatives of various theological colleges in or near Manchester. An advisory board has been appointed, which will be of great value in bringing skilled opinion to assist in settling questions that may arise. Fourteen students have entered for the degree of B.Com. The classes in Chinese have been continued, and, though the numbers have been small, the value of the classes has been demonstrated by the nature of the appointments obtained and of the work entrusted to those who had studied the Chinese language under Prof. Parker's instruction.

Birmingham. THE Council unanimously passed the following resolution on the resignation of Prof. Windle:—"That the Council receives the resignation of Dr. Windle with regret, and, while congratulating him on his important educational and administrative appointment in Ireland under the Crown, takes the opportunity of thanking him for his long and distinguished services to the School of Medicine in Mason College and to the Medical Faculty of this University, both as Dean and Professor, as well as to the general cause of higher education in the Midlands."

Mansfield. A SPECIAL appeal for more funds is accompanied by a statement reviewing the growth and development of the College, written by Principal Fairburn. During the eighteen years since Mansfield came to Oxford, 160 have been through the College. Of these 2 have died, 118 have "gone down," and 40 are still pursuing their studies. Of the *alumni* of Mansfield 5 are Methodists, 8 Presbyterians, 13 Baptists, and the others Congregationalists. Of the 118 all but one (says Dr. Fairbairn) have become either ministers or missionaries, though their ministry has been realized in varying kinds of service—religious, civil, educational, or literary. Ninety-three have become Congregational ministers, nineteen either professors or tutors. All have graduated, at home, or in the colonies, or in the United States. Mansfield men have become ministers or missionaries, preachers or teachers, all the world over.

Wales. IN view of the decision of the Chancellor of the Exchequer to increase substantially the Treasury grants to university colleges in England, representatives of the three Welsh university colleges met at Shrewsbury (November 10) to consider what further action should be taken to secure the same advantages for those institutions. It was unanimously decided to recommend the Councils of the colleges to appoint a joint deputation to wait again upon the Chancellor of the Exchequer and return an affirmative reply to the Chancellor's suggestion that the colleges of Wales should submit themselves to an inspection by the Treasury once every five years in the same manner as the university colleges of England. It is understood that by this means the three university colleges of Wales will obtain the same financial advantages

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as the English colleges. At the last meeting of the Cardiff College Governors, Principal Griffiths stated that, if the Welsh Treasury grants were placed on the same basis as those to the colleges of England, the Cardiff grant, instead of being £4,000, would be at least £6,500 per annum.

Wales—Aberystwyth. At the half-yearly meeting of the Council Principal Roberts reported that at the opening of the session there were 467 students, being an advance of 15 over last year. Of these 242 were women. There were 73 from North Wales and 240 from South Wales. There were 413 pursuing complete university courses. In June 313 passed the degree examinations of the University of Wales, including 43 in Honours. There was a satisfactory increase in the law students. For the agricultural section a farm of 180 acres had been taken, which, it was hoped, Lord Onslow would open at an early date. In spite of careful economy the finances of the college for the third year showed a substantial deficit, and there was pressing need of aid from public funds. With the two sister colleges, they would make a further appeal to the Chancellor of the Exchequer for increase of the Treasury grant. It had been resolved to transfer the Welsh library to trustees as a national trust on condition that it continued at Aberystwyth, and the Council had approved the appointment of a committee to appeal for funds to provide the building for the library, which was estimated to cost £20,000. Already £1,600 had been promised, and the site, valued at £2,000, was secured.

Bristol—University College. The annual report shows steady progress. The students number 1,084. Donations of nearly £5,000 outside the ordinary income were given during the past year. Still, the funds are inadequate; and they are also insecure, there being no endowment. "The support that Bristol, the sixth among the large cities of England, has given Bristol University College," said Mr. Lewis Fry, Chairman of the Council, "is by no means commensurate with its wealth and importance."

Aberdeen. It has now been definitely decided to celebrate the quatercentenary of Aberdeen University in the end of the academic year 1905–6, which will mark the establishment by Bishop Elphinstone in 1505–6 of a regular teaching institution (at first called the College of St. Mary, but afterwards King's College, in honour of its patron James IV.), within the University founded eleven years earlier under a Bull granted by Pope Alexander VI. It is a happy coincidence that the same year, 1906, will see the completion of the new buildings of Marischal College, a foundation which will then have reached the respectable age of 313 years.

THE TEACHING OF LATIN IN SECONDARY SCHOOLS.

MEMORANDUM TO INSPECTORS.

The following instructions, just issued by the Board of Education, have been drawn up with special reference to the work in second-grade boys' schools, and can only be applied to first-grade schools and girls' schools with some modification:—

Pronunciation.

It does not yet seem possible to require a uniform system of pronunciation for all schools, but it is essential that the pronunciation should be uniform within each school. The head master, in sending in the syllabus of work, should state the system used in the school, and the inspectors should inquire whether it is consistently carried out. If asked for advice on the system of pronunciation which should be adopted, the inspector can refer to a pamphlet published by the Cambridge Philological Society, entitled "The Pronunciation of Latin in the Augustan Period." Trubner, 1889. Price 3d.

In all schools careful attention must be paid to quantity, in prose no less than in verse. No teacher can be recognized as an efficient teacher of Latin who is not thoroughly acquainted with the structure of the more common forms of Latin verse and the general laws of quantity.

Course of Instruction.

It is not proposed to lay down any rules as to the age at which Latin should be begun. Inspectors should, however, inquire whether it seems that boys are beginning it who, because of their immaturity, are unable to profit by the instruction. It is generally advisable that the boys should have received some elementary instruction in the analysis of the sentence before beginning Latin. If they have not, it is necessary that the master who teaches Latin should himself give this instruction, and the inspector must inquire whether this be done.

Under no circumstances can a course be considered satisfactory in which the first stage is the learning by heart of grammatical forms without exercises in which the pupil becomes accustomed to their use.

Throughout the course there must be a constant study of Latin texts. The inspectors must inquire whether they are properly graded in difficulty. After the stage of isolated sentences the pupils should have practice in short passages, whether selected from easy Latin authors or composed for the purpose. A course cannot be accepted in which the boys are without preparation of this kind put on to the translation of, *e.g.*, a Book of Caesar. In the books taken for translation, verse as well as prose must be represented.

It is important that the pupils should have an opportunity of becoming acquainted with the matter of the ancient authors they study, and with the more important aspects of ancient life and ancient history. Inspectors should inquire what provision is made for this. They should also inquire whether the school is sufficiently supplied with books of reference, atlases of ancient geography, representations of ancient buildings, dress, &c.

CURRENT EVENTS.

Fixtures. A paper on "The Method of Teaching French after the First Stage" will be read by Mr. F. B. Kirkman, B.A., at the meeting of members of the College of Preceptors to be held on December 14.

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Miss C. A. Raisin, D.Sc., will lecture on "London, its early Foundation and later Growth: a Geological Study" at Bedford College for Women on December 8, at 5 p.m.

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Lord Londonderry will receive a deputation from the Association of Chambers of Commerce on December 12 with reference to the resolution passed at the Manchester conference of the Association on the question of higher technical and commerical education, for which the Chambers think better provision should be made.

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The prizes for the session 1903–04 at the Northampton Institute will be distributed by Lord Reay on December 9, at 8 p.m. Conversazione to follow.

Honours. Dr. F. G. Kenyon has been elected a Fellow of Winchester College by the Warden and Fellows of New College, Oxford. Dr. Kenyon was a scholar of Winchester and of New College, and was afterwards a Fellow of Magdalen College.

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Prof. Osler, the new Regius Professor of Medicine at Oxford, has been elected a Student of Christ Church.

* * *

The University of Bombay has conferred the honorary degree of LL.D. upon Dr. R. G. Bhandarkar, the distinguished Sanskritist.

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Mr. Andrew Carnegie, LL.D., has been re-elected Lord Rector of the University of St. Andrews without opposition, Mr. Andrew Lang and Sir Henry Craik having declined to stand.

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Miss L. M. Faithfull, Vice-Principal of the Women's Department, King's College, London, has been elected a Fellow of the College.

Endowments and Benefactions. Mr. J. Cosmo Melvill, the Chairman of the Manchester Museum Committee, has presented to the Botanical Department of the Museum his extensive herbarium, the collections of some forty years. Thus, according to Sir W. T. Thiselton Dyer, Manchester University is in possession of botanical teaching appliances more admirably designed and more efficiently carried out than he has seen anywhere else.

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Mr. Alfred Beit and Mr. Werner have offered to found a Professorship and an assistant-professorship of Colonial History in the University of Oxford, with an annual prize in the subject, payment of examiners, and a donation to the Bodleian Library for the purchase of pertinent books.

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The Rhodes Trustees will give £200 a year towards the stipend of the Reader in Pathology at Oxford for the next five years.

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In recognition of the welcome and facilities offered to the British Medical Association, the Executive Committee of the Oxford Division of the Association has presented the Pitt Rivers Museum with a permanent installation of electric light.

* * *

Under the will of the late Mr. Isaac Roberts, D.Sc., F.R.S., &c., chief of the Crowborough (Sussex) Beacon Observatory, two scholarships in science, £50 a year each, will eventually be established in each of three institutions—Liverpool University, Bangor University College, and Cardiff University College.

* * *

The Rev. Alexander Warrack, M.A., has presented to Aberdeen University a collection of books on minor Scots poets and poetry formed by him in connexion with work done for Prof. Wright's "Dialect Dictionary." Mr. Warrack graduated at Marischal College in 1855.

* * *

Mr. Higgins, M.L.A., Attorney-General in the Labour Ministry, has given £1,000 to endow a scholarship for (knowledge of) poetry in Melbourne University. The Victorian Government is pledged to give a sum equal to the gift in all cases of new scholarships.

* * *

Cornell University is expected to receive well over £100,000 under the will of the late Prof. D. W. Fiske.

Scholarships and Prizes.

A number of scholarships and exhibitions at University, Exeter, and Oriel Colleges, Oxford, will be awarded on a common examination beginning January 10. Particulars and forms of entry from the Dean of Christ Church.

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St. Hilda's Hall, Oxford, offers two open scholarships, £40 and £30 for three years, to students proving need of pecuniary assistance for a university course. Examination in last week of June next. Particulars from the Principal.

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The award of the Reid Fellowship at Bedford College for Women, £50 a year for two years, is deferred till 1905. Apply by May 30. Candidates must be Associates of Bedford College and graduates of London University.

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Preliminary examinations for fifteen free open scholarships at the Royal College of Music, South Kensington, will be held on January 25 in various local centres throughout the United Kingdom. The scholarships entitle the holders to free musical education at the college, and are, as a rule, tenable for three years. Further information and official forms of entry may be obtained from the Registrar.

Appointments and Vacancies.

Prof. Arrhenius, the distinguished physicist of Stockholm, recent recipient of a Nobel prize, has been invited to accept a Chair in the University of Berlin.

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Dr. E. Ray Lankester, Director of the Natural History Museum, South Kensington, has been appointed Romanes Lecturer at Oxford for 1905.

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Principal Dale of Liverpool University succeeds the late Dr. Mackennal as Chairman of the Council and Board of Education of Mansfield College, Oxford.

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Mr. Henry Cecil Wyld, B.Litt. (Oxon.), Lecturer in English at Liverpool University, has been appointed to the Baines Chair of English Language in the University.

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Mr. W. Owen Williams, formerly Principal of the New Veterinary College, Edinburgh, recently closed, has been appointed Professor of Veterinary Medicine and Surgery in the University of Liverpool.

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At the University of Liverpool, Dr. J. H. Grindley has been appointed Lecturer, and Mr. A. Leitch, Assistant Lecturer, in Engineering; and Mr. G. E. Piper, Demonstrator in Applied Mechanics and Engineering Design and Drawing.

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Mr. T. Hudson Williams, M.A. (Lond.), assistant lecturer in Classics, has been appointed to the Chair of Greek, in Bangor University College.

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Mr. J. F. Gill, M.Sc. (Vict.), has been appointed a Demonstrator in Mechanical Engineering in Birmingham University.

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At Royal Holloway College, Miss P. Walters, A.R.C.M., has been appointed Staff Lecturer in Music; Miss D. Mason, Assistant Lecturer in Classics; and Prof. A. F. Pollard, Lecturer in Modern History.

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Miss Kate Warren has been appointed to act as deputy-assistant Lecturer in English at Bedford College for Women for the Session 1904–05.

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Mr. S. L. Brown, B.A., late Scholar of Wadham, has been appointed Lecturer in Theology at Ripon Theological College.

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Dr. E. Collet, McGill University, Montreal, succeeds Prof. Dalby in the Chair of Mechanical Engineering and Applied Mathematics at the City and Guilds Technical College, Finsbury.

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Dr. Frederic Rose, British Consul at Stuttgart, whose score of reports on technical education in Germany are well known, has been appointed Assistant Educational Adviser to the London County Council.

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Mr. T. R. Collier, M.A., retires from the Principalship of Belfast Royal Academy after 31 years' tenure, and is succeeded by Mr. J. N. Shearman, B.A. (T.C.D.), formerly assistant English and Classical master at St. Andrew's College.

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Mr. W. F. Eastwood, a graduate of the Massachusetts Institute of Technology, and formerly a technical instructor under the Leicester School Board, has been appointed head of the Department of Metal Work, Machine Work, and Mechanical Drawing in the Cleveland (Ohio) University School.

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The death of Dr. T. A. Stewart has caused a movement in the Scotch Inspectorate. Mr. A. E. Scougal, of the Glasgow district, goes to Edinburgh as Chief Inspector of Schools, in room of Dr. Stewart. Mr. A. R. Andrew becomes Chief Inspector in Glasgow, in room of Mr. Scougal. Mr. W. G. Fraser, Junior Inspector, has been promoted to be Inspector; and Mr. David Thompson, first-class sub-inspector, has been promoted to be Inspector, and succeeds Mr. Macleod at

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Elgin. Mr. J. H. Murray, second-class sub-inspector, succeeds Mr. Fraser as a Junior Inspector, and Mr. A. McDonald, second-class sub-inspector, succeeds Mr. Thompson as a first-class sub-inspector.

* * *

Mr. R. D. T. Alexander, of King's College, and Mr. F. W. Elsden, of the City and Guilds Central Technical College, have been appointed Assistant Engineers in the Department of Public Works in India.

Literary Items.

In Messrs. A. & C. Black's delightful series of "Beautiful Books," "Bonnie Scotland," by R. Hope Moncrieff (Ascott R. Hope), has just appeared; and "Familiar London," painted by Rose Barton, and presenting for the first time "an approximately complete picturing of London in colour," and "Edinburgh," painted by John Fulleylove, R.I., and described by Miss Rosaline Masson, are announced to follow.

* * *

Messrs. Longmans promise "The Adventures of King James II. of England," exhibiting the King in new lights. They also announce "The Wampum Library of American Literature," edited by Prof. Brander Matthews, Litt.D., of Columbia University, and "planned to include a series of uniform volumes, each of which shall deal with the development of a single literary species, tracing the evolution of this definite form in the United States and presenting in chronological sequence typical examples chosen from the writings of American authors."

* * *

Mr. Fisher Unwin is publishing in the "New Irish Library" a new edition of the "Life of Owen Roe O'Neill," by J. F. Taylor. He also announces "Party Organization and Machinery in the United States," by Jesse Macy, Professor of Political Science in Iowa College, whose work on "The English Constitution" is well known in this country.

* * *

Messrs. Kegan Paul, Trench, Trübner, & Co. announce "The Home Education Series"—five volumes (in the first instance)—edited by Miss Charlotte M. Mason, for the Parents' National Educational Union.

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Messrs. Nelson's "New Century Library" already includes a fine selection of the best fiction, extremely well printed and attractively bound in neat and convenient form. We prophesy a run upon it at Christmas time.

* * *

Messrs. Macmillan will presently publish the "Harvard Lectures on Greek Subjects" delivered by Dr. S. H. Butcher, late Professor of Greek in Edinburgh University.

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Mr. Brimley Johnson announces a reprint of four of Disraeli's novels—"Vivian Grey," "Coningsby," "Sybil," and "Tancred"—under the title of "Young England," edited by Mr. B. Langdon Davies, and illustrated by Mr. Byam Shaw.

* * *

The Normal College Press has recently been registered as a limited company under the name of The Normal Press, Ltd.

General.

Prof. Barrett Wendell, of Harvard, lately Clark Lecturer at Trinity College, Cambridge, has offered to place a brass tablet to the memory of John Harvard in the chapel of Emmanuel College, Cambridge, of which John Harvard was a member.

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Sheffield still wants £60,000 of the sum required before application can be made for the University charter.

A bust of Richard Roberts, the celebrated inventor of the self-acting mule (1832), and of a varied series of other mechanical devices, has been unveiled at University College, Aberystwyth.

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The Cambridge Local Examinations and Lectures Syndicate announce that after the present year the arrangements made for examining Senior Candidates in the Local Examinations in Spoken French and Spoken German will be extended to Junior candidates.

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The syllabus of the Local and other examinations of the London College of Music, valid till April, 1906, is now available. The Annual Report for 1904, just issued, shows remarkable progress.

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On the celebration of the Jubilee of Cheltenham Ladies' College (November 9), Miss Dorothea Beale, LL.D., was presented with her portrait (in her doctor's robes), painted by Mr. F. J. Shannon, A.R.A. In her forty-six years' connexion with the College, Miss Beale has seen the students rise from under fifty to nearly a thousand.

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The L.C.C. propose to utilize the late Colonel North's house at Avery Hill as a residential training college for teachers.

CORRESPONDENCE.

[*We do not hold ourselves responsible for the opinions expressed by our correspondents.*—Ed. *E.T.*]

THE DIPLOMA EXAMINATIONS.

Some More Friendly Criticism.

To the Editor of "The Educational Times."

Sir,—In March, 1903, I drew the attention of readers of *The Educational Times* to the fact that the higher teaching diplomas of the College of Preceptors did not include advanced English or History as optional subjects, and I suggested that, if the London Intermediate Arts were chosen as a model for the L.C.P., and the Final B.A. for the F.C.P., the subjects might be employed as two groups for these diplomas. As a result of some correspondence, the Council of the College has accorded Higher English a certain degree of recognition, but History none whatever.

Higher English, too, instead of being employed as a group, was only included as a branch of the Language groups, and, although this maintains the uniformity of these groups, one cannot help thinking that it is but scant recognition for such an important subject; moreover, English is the only language in which more than *one* paper is set.

The work in the English group for Licentiate comprises: Anglo-Saxon (over a hundred pages of grammar and a fair amount of prepared translation), Chaucer's "Prologue," Tennyson's "In Memoriam," Shakespeare's "As You Like It" and "Coriolanus," Milton's "Paradise Lost" Books I. and II., and History of the English Language.

Yet this work was not treated as a group, nor were the candidates exhaustively examined in it, but it was crowded into two papers of a couple of hours each. My plea with regard to English is the same as it was more than a year and a half ago—that it be accorded the full recognition of a branch, as so wide a subject surely deserves. It seems a somewhat herculean task to expect even the most expert examiners to examine candidates *thoroughly* on the work I have indicated within the scope of two papers of two hours' duration.

But, scant as the recognition of English has been, it is still stranger to find that History has not been employed as an optional subject.

As I have previously pointed out, there must be hundreds of teachers in the country whose principal work is history teaching; yet they are afforded no opportunity of taking their diploma in the subject in which they have specialized. Surely History in all its branches—Constitutional, Ancient, Modern, &c.—is a wide

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and sufficiently comprehensive subject to delight the heart of any examiner! By the actual introduction of English the Council of the College has shown itself willing to be influenced by the opinion of teachers, and there is no reason to suppose that, if the defects of the present system were clearly pointed out to them, they would not amend the existing conditions, and at the same time give History the meed of recognition that it fully deserves. I believe that already several teachers have availed themselves of the new regulations to take English in their diplomas, and no doubt History, too, would be popular among candidates.

If teachers approve of my views, they should endeavour to introduce their opinions to the College authorities, who would probably be willing to go into the matter once again, for no doubt they are desirous of placing their diplomas within the reach of as many teachers as possible without lowering their high standard in the least.—I am, Sir, &c.,

GILBERT J. PASS.

Craufurd College, Maidenhead, Berks.
November 9, 1904.

AN EMPLOYER ON AFTER-SCHOOL STUDY.

AN ENCOURAGING EXAMPLE.

To the Editor of "The Educational Times."

SIR,—I have been much interested in perusing the report of a lecture by the Rev. J. O. Bevan on "Study after School-days," contained in your issue of the 1st inst.

The subject is of national importance from an ethical point of view, and is vital in its bearing upon the prosperity of our manufactures and commerce generally.

In an age when science is daily superseding the old methods of production it is imperative that the rank and file of the industrial army should have at least a fair technical knowledge of the arts, or the trade of the country will gradually drift to States where the units are better equipped.

All large employers of labour can tell of the difficulty they experience in finding workmen of sufficient technical knowledge when modern methods are, perforce, introduced into their works, and how they are frequently obliged to import foreign operatives.

Mr. Bevan makes some practical suggestions in the direction of creating an incentive to after-school study which are valuable; but, when faced with the problem of earning a living, the commercial conscript, surrounded by fresh associations, is apt to take too narrow a view of his position and prospects and to regard the continuance of study as a loss of time.

Surely, then, it is to the interest of the employers of labour to second the efforts of the school teacher by offering inducements to their employees to continue their studies on lines which in a few years will render their services more valuable.

The perusal of Mr. Bevan's paper led me to recognize this, and I decided to offer a small monetary reward to every employee in the works which I control (where over two thousand are engaged) who shall secure an Elementary Certificate at the local technical schools.

If this meets with success, I propose offering larger rewards on securing certificates in the higher stages.

The experiment is at least worth a trial, and teachers throughout the country might make the suggestion to the employers in their respective localities.—I am, Sir, &c.,

W. E. HIPKINS.

16 Augustus Road, Edgbaston, Birmingham,
November 14, 1904.

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To the Editor of "The Educational Times."

Dr. F. H. HAYWARD, P.-T. Centre, Torquay, writes: "It may be of interest to your readers to mention that practically every feature which distinguishes this very good syllabus from the very bad ones which were set forth by the great School Boards is found in the work on the subject which I published two years ago. The use of Amos, of the history of Isaiah, of selections from the latter half of Isaiah, the reference to the great contemporary monarchies, the use of pictures, the non-employment of the earlier chapters of Genesis, the use of St. Mark as the basis of the study of the Gospels, nay, the comparative subordination of the miraculous in the Gospel story—in all these and in other matters I find I was in the right."

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IS THE NEW GEOMETRY WORTH PRESERVING?

AT the Monthly Meeting of the College of Preceptors on November 23, Mr. E. A. BUTLER in the Chair, the Rev. D. L. SCOTT, M.A., LL.D., opened a discussion on the above subject.

Dr. SCOTT said he wished it understood that he was not about to give a lecture, but to initiate a discussion on a subject of practical importance in the work of the school, and for this purpose he thought it would be useful if he were to indicate certain points which might serve as a basis of debate. All present had probably had much experience of the subject, and some would remember Mr. Eggar's lectures, which were delivered in the same lecture hall two years ago, when he (Dr. Scott) had the honour of presiding. They would recollect the crusade of many years ago against Euclid on account of his errors and the defects of his logic, and, above all, most would remember how in their own school days they had fancied Euclid could never do them much good; and hence they had been glad to hear of a new system by which the subject might be approached in a more interesting way. These ideas remained long in the air; but at last they were informed that the universities had given assent to the new form of geometrical teaching, and all were most eager to find out what that meant. In a very short space of time there descended on the schools a flood of new text-books bewildering to the teacher: most of them, singularly enough—as it had been pointed out to him—the result of collaboration; every school publisher put out a new book, and one firm was responsible for no fewer than three. They had all been stirred up to find out what they were to do, and he feared the advice of the university had not afforded them much real help. The speaker, being himself an oldish teacher, and brought up with very strong notions as to the exact use of references, they could appreciate his bewilderment at the lack of agreement as to sequence in the books referred to. There were most peculiar orders, with the great difficulty added that one could not quite tell whether he was bound to keep to the old order or allowed to follow the order of a particular teacher. Many of the new text-books jarred very much on his sense of logical sequence. One text-book started with a considerable number of theorems, followed by a number of problems in parallel courses, and the author stated that theorems 1 to 6 must be read with problem 25; but theorem 6 assumes a bisector, which you did not get until problem 26 was reached. Another book gave what in Euclid is Prop. 26, then Prop. 4, next Prop. 24, then 25, and then Prop. 8; and Prop. 46 assumed what is not proved earlier than Prop. 64. Thus it seemed that the old rule of not assuming the truth of anything not already proved was set at naught. And surely the proof of Prop. I. 4 by I. 26 was far too tempting and too convenient for boys to be permitted to resort to it. Again, on a certain page of another book a method was given of finding the area of a triangle with the direction that the use of this method must be deferred until a considerably later page had been read. Many new methods and many shorter methods had been already employed in regard to Euclid's propositions, and he felt quite certain that Euclid himself would cordially accept them. But the great point was whether they were to teach Euclid for the sake of the geometry or for the sake of the mental training to be gained by the study. According as they answered this question, they approached the study of Euclid from opposite sides. He regretted that the "donkeys' bridge" had disappeared, with I. 7 and many others; and, if mental training were the object in view, he felt that this disregard of logical sequence jarred upon him. A Simson was wanted who should, with the authority of the universities, take all the new geometries and from them produce one and say: "That is the sequence you must follow." He himself would recommend that they should keep to Euclid's order, though not necessarily to his proofs. He desired a definite order put forward by authority, and that should be accepted as binding. He trusted he had suggested something for discussion; but he wished to put the

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matter before them in a particular form. It would not do to discuss any particular book, or to advocate the use of any particular book. He would put to them three questions:—

1. Did the new geometrical teaching give better results, especially in the teaching of riders?
2. Did they find that their boys, especially in the upper forms, liked geometry better than when they had to learn Euclid?
3. Did they find that their boys' thoughts were as well regulated as they were under the old system?

The title he had given to the subject of the discussion might possibly offend some susceptibilities; but he had chosen it in order to provoke a more lively debate.

Mr. ANDRADE did not see any objection to the putting of Prop. 26 before Prop. 4, since both could be proved by first principles—viz., the definitions of an angle and a straight line, and the one assumption that, if two plane figures can be made to coincide, they are equal—and each could be proved independently of the other. As to the questions put by the opener, he thought the first was not as clear as it might have been: so much depended on what was meant by "the new geometry." What he felt to be the chief improvement in the new method was something more or less independent of any text-book—viz., that it admitted of young boys beginning mere practical geometry without any theory at all—that, as far as possible, they should deal first with the familiar and gradually proceed to the unfamiliar, and that they should not be required to tackle any question of logic. He would, moreover, recommend that for the first year the boys should be allowed to find out for themselves the facts of the case. He found that a great deal of ground was thus covered without letting them feel that they had learnt absolute and incontrovertible truths. Afterwards a new beginning might be made with any book, and theory could be applied. First geometry, then logic. Carroll's "Picture Logic" did not take long to explain to a boy of eleven or twelve. He considered the new geometry did give very much better results, and he quite agreed that the principles should be taken in some definite order, preferably Euclid's order. A distinct gain would result from the plan he advocated, and children would no longer come to the study of Euclid without really knowing what an angle or a straight line was.

Mr. BAYLISS thought the arguments against the new system might have been made more definite. It was too early a day to say definitely that it was better than the old. He believed it to be better, and would like to give his grounds for that belief from three points of view—of the mathematician, of the non-mathematician, and of the educationist. From the point of view of the mathematician it could be urged that it had given freedom in place of a hampering rigid system, had done away with the method of sequence and intersequence of theorems and problems, and had given instead classification, which was the foundation of every science. Instead of now being required to learn a large number of propositions in an order invented by one extremely clever man two thousand years ago, they were now enabled to go to first principles, and found that all the geometry that was required for Euclid's six books could be classified under some dozen fundamental principles from which every single proposition could be proved. It had, therefore, made the whole subject infinitely clearer, more scientific, and easier; and, in addition, geometry could now be co-ordinated with arithmetic and algebra. The non-mathematician ought to welcome the new geometry on the grounds of greater intelligibility, of rapidity of acquisition, and of utility as seen in the shorter time spent in acquiring a knowledge of the facts of geometry and the more practical value of the facts when acquired. From the educational point of view the advantage to be derived from the new system was also great. It was now possible to combine theory and practice in a manner hitherto unattainable. Again, the new method trained the average boy's imagination in a manner that Euclid never could. He found the boys under his (the speaker's) own observation were most distinctly gaining in reasoning power. Three years ago, when the system was introduced, the boys could do the practical work, but found it difficult to state in writing the reasons for their conclusions; but, after seeing a few propositions worked out from fundamental principles, they saw what was expected of them, and now the majority were able to give much more intelligent proofs than he had ever before received from students of Euclid. He would add that the new method required, not new teachers, but teachers who would give their whole time and thought to the work. Under the old system it was the common practice for the master to call up boy after boy and see if he could "say" his lesson. Now a master's time was taken up in carefully watching that each boy did his own individual work. Instead of having one set of words to hear, he had to receive twenty different accounts, to approve the good and to condemn the bad. Therefore, if the masters of the present day were welcoming the new method, it could not be to save themselves trouble. He agreed that the multiplicity and diversity of text-books was a serious disadvantage. A head master should draw up a scheme suitable for his own school, and for the boys, at any rate, there should be no books; the master should have full discretion to take the problems and theorems and to deal with them in the manner he thought best for his pupils. Reference should always be made to fundamental principles, and not to numbered propositions. He would ask rather for an accepted classification of ideas, and not a sequence in the present sense—not an authority, but a general recognition of fundamental principles.

Mr. PATTERSON thought that without books they would be much more liable to error. If every form master were to work according to a scheme of his own, as the last speaker seemed to suggest, there could not fail to be much confusion when a boy passed from a lower to a higher form. It would at least be necessary to have one plan of work formulated for the whole school. Then, as to classification, he did not see that the new geometry was better arranged than Euclid, since Euclid's books, as they knew, corresponded to certain classes. And, after all, they must teach in some order, if not in Euclid's order: it would be impossible to deal with the five or twelve classes at once. This applied to Euclid and to the modern systems alike, and Euclid lent itself to classification in a not less degree than they. Like so many of the strong supporters of the new geometry, the last speaker had assumed that Euclid was always taught badly, but his strictures might apply equally to the teachers of the newer system. As to practical work, he would point out that "to bisect a given angle" was as much Euclid as the new geometry. The teaching of Euclid did not preclude the use of drawing or of measuring. An arithmetic in common use had long ago made them familiar with the co-ordination of Euclid with arithmetic. He (the speaker) could not see why Euclid should not be adopted as the text-book, with as much practical work and co-ordination as might be desired, as well as any of the others. It had been said that the new geometry gave boys a much better mastery of facts. That they got a mastery of twelve facts he could quite grasp; but he was inclined to think that those twelve fundamental principles corresponded to Euclid's axioms. He agreed with the last speaker as to the desirability of every boy's being familiarized with the notions of line, angle, circle, and so on, before beginning Euclid, but he had rather understood him to say that he would like them to go through the whole of their geometry in this way before they came to the formal proofs. The objection to this was that they could not see the object of the formal proofs afterwards. If they had to learn their chief geometrical facts and then to go back to the beginning for formal proofs, they would be more disgusted with the subject than ever they were said to have been under the old system. As to the first of Dr. Scott's questions, he did not think they had been teaching the new system sufficiently long to find out. They could not help the fact that they had been brought up under Euclid, and thus might not be giving the new geometry a really good chance. One gain certainly was that boys could now draw a neater figure, that they had a better eye for form and a better eye for geometry; he found, however, that they solved riders just about as well, or as badly, as of old. He was now being asked continually by pupils if this or that might be assumed by them. He was accustomed to tell them what he thought and what the last speaker would consider—but which was by no means necessarily what an examiner might think—was the proper answer—viz., to assume nothing, but to go back to first principles. That was the safest course. In reply to the second question, he did not find that boys did like the new system very much as yet. Undoubtedly, certain boys who before could not take to the study of geometry at all, but who had a turn for drawing, did like it better. The bright boy did just about as well as before; but the average boy did not care any more for his geometry now than he did before. The last of these questions rather assumed that the subject was relied upon to regulate the thoughts of boys. He considered it rather hard upon geometry that it alone should bear the whole of this burden. Doubtless there was a great deal of mental discipline

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in Euclid, and that there was so much seemed to be its greatest drawback. Even the definitions presented difficulties when not (as in one bad system of teaching) taken in their whole extent before proceeding further, and the earlier propositions presented difficulties too. Many, unfortunately, never really got through them: they just left them behind. If they did actually learn them, they had accomplished a really hard piece of work at something they did not like, which was a praiseworthy achievement and most excellent discipline. Most subjects, including the one under discussion, were now made too easy for boys; all the difficulties were knocked out of them or carefully prepared for easy digestion beforehand. He was inclined to think that a boy's thoughts were not quite so well regulated as they used to be, and that his first thought was perhaps not so much to grapple with a difficulty as to get round it somehow. He did not consider that boys did get as good mental training out of the new geometry as from the old method.

Mr. WILSON said there seemed to him to be considerable confusion in the minds of teachers as to the objects of geometry teaching. Geometry was an abstract science, and, as such, had a method of its own which must be kept in view from the first. If the chasm between the concrete and the abstract could be bridged over by the methods of teaching elementary geometry now coming into use, something might be gained; but it should be remembered that the utmost dexterity in the use of instruments and the construction of figures do not make a geometer—no more than going over Euclidean or non-Euclidean proofs of theorems will do so. The teaching of geometry had failed if it did not put the student in the way of finding proofs of his own. The great fallacy that some teachers seemed to him to fall into with regard to the Euclidean geometry was that there must be something false about a system that had existed so long. Now, the subject-matter of geometry—the investigation of space relations—had not changed since Euclid's time. The most amazing thing was that Euclid's method, after the lapse of two thousand years, had not been improved out of existence, but still held its own. The attempts at improvement from Euclid's day to ours had doubtless added greatly to the advance of the higher geometry, but in elementary geometry they resolved themselves into the adoption of equivalent definitions and axioms, the introduction of these gradually as they are required, and a change in the sequence of theorems, taking practical geometry as a preliminary, or *pari passu* with theoretical geometry. It was, perhaps, too early to say whether these changes would produce all the advantages their advocates claimed, but there was little novelty in them. The intelligent teacher of geometry in the past did, as a matter of fact, use the constructions of practical geometry, did contrast Euclid's proofs with others, and did discuss with his pupils the blemishes, or supposed blemishes, of the text, especially in respect to parallels and proportion; and then, as now, such handling gave vitality to the teaching. Much of the difficulty experienced in teaching geometry arose from the study being begun before the pupil's mind was able to grasp an abstract chain of reasoning. He must confess that his own experience, so far, as an examiner had not given him a very favourable opinion of the results of the new methods, although he welcomed all improvements in geometry teaching.

Mr. EGGAR said his own experience as an examiner for the last two years was at variance with that of the last speaker. He had been much gratified with the uniform improvement in the results sent up. At the outset, as might have been expected, the practical work left something to be desired, and the reasoning part in many cases was also defective; but at the most recent examination the results showed a truly surprising improvement. The number of bad papers was very small, and there were very few cases indeed of the absolute nonsense that examiners were accustomed to meet with in looking over Euclid papers. He did not think the papers were harder to mark than before, but undoubtedly they were much harder to set. It was much harder to set a paper which should be fair to all candidates than a paper confined to the first four books of Euclid. Under the present system of examination, where any order was accepted, there was no possibility of a definite sequence of propositions becoming established, and so the examiner was restricted as to what he could set in the way of book-work, though not at all in regard to applications of the book-work. His own earlier experience as an examinee was that he could get very good marks on a Euclid paper, but it was not until he came to teach the subject that he found that there were points in his earlier work which he had never adequately grasped. Newton's experience was worth recalling. When he went up to Cambridge Newton regarded Euclid as a "slight book," but some years later he realized what a wonderful logical system it was, and after that he never wavered in his allegiance to Euclid. This pointed to what he thought was the real fact, that logic and strict geometrical reasoning were not a subject for young boys, but rather for the university. He hoped Euclid would not disappear altogether. As a logical system it was superior to any of the new forms.

Mr. MONK said he retained a very vivid remembrance of the early geometrical instruction he had received before the modern methods which they were now discussing had been thought of. He could say, with the utmost assurance, that the geometry teaching of those early days had left on his mind no such impression as that which had been attributed to it by a previous speaker. It was, indeed, the old Euclidean propositions that were the basis of that instruction; but anything less resembling a wooden or mechanical method of imparting geometrical truths could scarcely be conceived. The lesson was rather a familiar conversation than a piece of distasteful task-work, the teacher leading his pupils on step by step to the recognition of the facts and the assurance of the truth of the demonstration they were considering together.

Mr. ORCHARD remarked that in answering the three questions put by the opener, both teachers and examiners appeared to be divided. Geometry in any form was undoubtedly a difficult subject, on account of its abstract character. The new method no doubt sometimes shortened the proof, and sometimes made it easier of comprehension—a not unimportant point in these days of educational pressure, and that was an argument for retaining some of the new system, though there might be some danger of inducing slipshod reasoning in the process. It might perhaps be found possible to retain Euclid, and to have a supplementary geometrical text-book embodying the best results of the new methods. As a mental discipline, he thought that Euclid must be allowed to be superior to anything to be found in the new geometry. Exception had been taken to the rigid adherence to a particular sequence in Euclid's plan, but surely all logical reasoning was dependent on sequences. There had been an attack on the Euclidean definitions, but he (the speaker) considered precise definitions to be of the first importance. It could not be denied that there was something to be said for the new geometry; but, for true geometry as a model of rigorous logical synthesis and of clear demonstration, they must, he thought, continue to award the palm to Euclid's "Elements."

MR. KETTLE said there was, as a matter of fact, no such thing as "new geometry"—what was so described being but the natural development of the old. Some of the speakers had insisted on the value of the mental training afforded by the study of Euclidean geometry, but how could a fair comparison be made? Geometry was, indeed, as one speaker had been at some pains to assert, an abstract science; but, in any case, it was necessary to work from the concrete up to the abstract, and the amount of concrete work required would depend on the individual. A born mathematician would take in his geometry however it might be presented; but, in the case of the average boy, it was better for the teacher to begin where the pupil could begin with him. He would, indeed, be an exceptionally gifted man who could reason out the fourth proposition of Book I. without mental reference to the figure. He did not think any case had been made out against the "new" geometry. The opener had asked was the new geometry worth preserving, and his whole indictment had been that its sequence was faulty, and that there were so many geometries flooding the schools that teachers were perplexed as to choice. Why should they be dependent on text-books at all? The next question was whether the pupils liked it. Interest in the lesson of course depended on the personality of the teacher and on his methods; but he was convinced by his own experience that the new mode of teaching geometry step by step, taking it as far as possible heuristically, and leading the pupils to find things out for themselves, was far better than the old method. He could not see why the new plan should not include the logical and mental training of Euclid and a great deal more. He agreed with Mr. Eggar that the work was now a great deal better done, and also that it was far harder to set papers of questions. The boys had a better grasp of the subject, and answered questions much more intelligently, and the results of only two or three years' work were surprisingly favourable. As preparation for concrete work in every department the new teaching was also superior. It had been found over and over

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again that young men, when required to make practical use of their Euclidean geometry, were completely at a loss. Euclid was not intended to be used as a text-book for children, and the subject was presented in a manner the reverse of that in which the knowledge had come to the geometer himself. His work might be useful for a philosopher, but it never had been and never could be the means by which a child might learn of the things about him.

The CHAIRMAN said that one or two points had come out in the course of the discussion. In the first place, that there were two aspects of the study of geometry, and some preferred to look at it from one point of view and some from the other—the one regarding the value of the facts learned, and the other the value of the mental training. He was inclined to think that those who had been trained on Euclid's methods had probably laid too much stress on the mental training aspect, and that, on the other hand, those who were the advocates of modernized geometry had laid a little too much stress on the acquisition of facts. It had also come out that a very great deal depended on the teacher. His own sympathy had been with those who, having been brought up in the older school, had felt themselves called upon to adopt a new plan of teaching; but he was bound to say that the subject had not been by any means badly taught under the old methods. One other point stood out—viz., that, whatever the method, it was very advisable to begin with practical work, and not to introduce the theoretical till somewhat later. That which was the very spirit of the new geometry had long been practised by those who had been working on the old Euclidean lines.

Dr. SCOTT, in reply, said he regretted that some teachers of lower forms had not spoken, not so much from the mathematical standpoint as of their own special practical difficulties. If there were teachers present who had come with the object of learning something that they might use in their teaching, they must have been disappointed. He would advise them for the present to keep their views to themselves, that they should not imagine that it had been the common practice to learn Euclid by heart, or that teachers of Euclid expected it to be so learned, and, above all, they should not accept the advice that had been given them by one of the speakers, never to use a book if they wished to deal effectually with the type of boy who always said: "Please, sir, we were never taught that." He had not been quite satisfied with the title of the discussion, which implied rather more than he had intended: he had chiefly designed to provoke discussion. His first question had been answered with an emphatic affirmative by Mr. Eggar. His second had referred especially to upper forms, and not much evidence had been adduced on that point; while, as to the third, one of the speakers considered that there were no available data. He earnestly hoped that, as a result of the discussion, they might soon have such a definite sequence put before them that they would be able to see exactly how they were to teach the subject, and what was expected in the way of results by those who came to examine their pupils and test their work as teachers.

A vote of thanks to Dr. SCOTT concluded the proceedings.

COLLEGE OF PRECEPTORS.

PRACTICAL EXAMINATION FOR CERTIFICATES OF ABILITY TO TEACH.

The following is a List of Successful Candidates at the Examination held in October, 1904:—

CLASS I.

Bowesman, E. B.
Coy, Miss E.
Jones, M.
Piffe-Phelps, W.

CLASS II.

Sawyer, Miss H. L.
Schwemmer, Miss E. M.
Young, Miss A. M.

STUDY AFTER SCHOOL-DAYS:

A SUPPLEMENTARY MEMORANDUM.

By the Rev. J. O. BEVAN, M.A., F.C.P.

IN the paper on "After-Study" reported in the October number an endeavour was made to focus the subject in the public eye, and to suggest certain remedies for any weakness which may have been discovered in the existing system. In the present issue an opportunity is presented for setting forth certain facts on which were based conclusions as to the present unsatisfactory state of things, and for furnishing a fitting conclusion to the paper by pointing out the necessity for stimulating and guiding the study after the first school life is over and for elaborating a further organization in respect of schools and teachers for the purposes of after-study.

IMPORTANCE OF THE SUBJECT.

The matter before us is of supreme importance, by reason of the numbers concerned and the general issues involved. In elementary schools alone in England and Wales there are 31,548 departments, and 5,037,498 scholars in actual average attendance. The total cost of elementary education for 1901–2 was thirteen millions. To these scholars must be added those attending secondary schools. Probably from six to seven hundred thousand children leave school year by year.

The question we are propounding is: How far has the education and training which these children have received predisposed and fitted them to continue their studies with interest, vigour, and success when they have become comparatively free agents? If, to a greater or less degree, this is not the case, by so much are the expense and the labour expended in the elementary processes thrown away. It is the last step that counts: if that be not taken, the goal is not reached—the steps between have availed but little. Leaving out of account all prejudice and ignorant criticism by outsiders, we may assume that none of us is quite satisfied with the results actually attained. We acknowledge regretfully that, in numberless cases, boys and girls regard their school progress and their very elementary acquisitions as complete, and not partial—as stopping, and not starting, places; that they consider the end of school as the end of learning; that, consequently, many lads and lasses go forth into the big world knowing so little that they esteem themselves as knowing everything; their heads being swelled with self-sufficiency, not with learning. Again, such is the imperative necessity of their going forth to earn a living that for a large proportion of our scholars the educational ladder is broken short off at the top. Teachers tell us that, if young people of this sort present themselves at a night school a year or so after they have started in life, it is found that many have forgotten nearly all that they ever knew. One would have liked to feel that, as a result of all our toil, the love of learning on the part of those committed to our charge would have been deeply implanted: but the fact remains that (whether through innate philistinism on the pupils' part, or through wrong methods on the part of the teacher, or through whatever other causes) a distaste for study for its own sake is generally felt and freely expressed. The testimony alike of master and mistress, farmer, merchant and manufacturer, goes far to prove that young people have a tendency to regard manual labour as derogatory; that they are practically worthless in the home, the counting house, and the farm; while they are often fond of idle pleasure, impatient of control, lacking in reverence, in civility, in initiative, and in the power of engaging in hard and sustained work. Experts point also to manifest signs of physical deterioration.

The Educational Remedy.

How far are these weaknesses due to our system of education? In what ways can this system be amended? In replying to these questions, and in offering a remedy, one leaves out of account questions relating to finance and administration, and deals solely with the matter from its highest side—the educational.

Naturally, the problem relates to all classes and grades of schools and scholars; but, needless to say, it is most acute in the case of children whose school course is so ordered as to terminate at the age of twelve or thirteen. It cannot, however, be affirmed that the outcome in regard to those who remain until they are sixteen or eighteen is altogether satisfactory. Of course one cannot ignore the fact that the schoolmaster alone is not responsible for the whole life of the child—its ad-

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vance or retrogression, its success or failure; but must acknowledge that this responsibility must be shared by the parent, the clergyman, and society at large. It must also be admitted that, if our system of education be faulty, the evil will be intensified as time goes on, so that it behoves us to apply a remedy without delay.

There are therefore three elements to be considered—the man, the machine, the material, *i.e.*, the teacher, the system, and the child. The problem to be solved is how to get as much as possible out of these three elements—how to provide that every child, at every moment, should have something to do, and a motive for doing it.

It is a problem that leads us to face both ways, and to keep before us a double task; namely, how to teach during school days so as to evoke a taste for reading and study; also how to provide an organization and a staff of teachers after the first school life is ended, whereby this taste may be further encouraged, gratified, and pursued to the utmost legitimate limit.

How far is the Child at fault?

It cannot be that the child does not want to learn. Our bantling is nothing at first but a note of interrogation. Are we not sometimes wearied out with the bombardment of questions to which we are subjected in the course of a journey or country stroll? All things and appearances are novel to the child. It is his bent to be original, for the young of every creature is naturally inquisitive.

To what then is due the subsequent distaste for study and investigation? Partly to the ingrained disinclination for hard work of all kinds displayed by the average child; partly to the compulsory element, to the repression of natural activities under existing conditions of school life; partly to our making the acquisition of learning too empirical, bookish, dogmatic, too much dominated by the aggressive personality of the teacher. There is not enough made of observation, experiment, original research, even of partial failure. The divine and illimitable curiosity of the child is not exploited. We even chide him if he asks questions; we desire to keep the monopoly of questioning to ourselves. The glory of surprise and discovery is lacking. We sin against the sound philosophical canon of Mr. Weller, Senior, enunciated in regard to his son's love letter, by blurting out the whole truth about a thing at a time, leaving nothing to minister to the child's passion for "finding out." Too much is done for the pupil, too little left for him to find out and do for himself. We prepare and prescribe all mental food in the tabloid form, with the effect upon the brain-digestion like unto that which would follow if we pursued the like course in reference to bodily nourishment. A teacher cannot hand out any ready-made success to his pupil; it would do him no good, and it would do the school harm. A lad should not expect to be always personally conducted along the primrose path, or to meet with unchequered fortune or uninterrupted success in study.

How far are we ourselves, as Teachers, at fault?

Our failure is mainly due to the cramped systems under which we have been trained and under which we carry on our work. Teachers are able, conscientious, sympathetic, and hardworking, but they obtrude themselves too much on their pupils. They have too great faith in sign, symbol, and shibboleth, and in the dispensing of the mixture "as before." We speak of teachers in the gross, allowing that a heaven-born teacher can work wonders, even under the most blighting conditions. Thus an indifferent teacher can be suffered to instruct those who are willing to learn, but the best teacher must be kept for the laggard and the dunce. The great secret is to create an appetite when the scholar is not hungry. That needs the original thinker, the planner—in other words, the genius. There are some representatives, doubless, who would be disinclined to get out of the groove, to raise the standard, or to take off their own mask. Thus a lad is often switched off the right path by having it pointed out to him the wrong way. It does not matter how good old methods are: new ones are better, even if they are only just as good.

How far is the System at fault?

If we have changed the point of view of the teacher and the scholar, and succeeded in applying the right stimulation to both, we shall have done something to adapt the educational machine to the work laid upon it, inasmuch as that system which is best administered is best. Still, it is incumbent upon us periodically to overhaul our methods and administrative machinery, especially when we bear in mind how the control of a State Department constrains all elementary education in an iron grip, and how a lengthened and almost sacred tradition still retains a hold on our secondary and public schools.

After-Study needs Organization.

If we consider the matter carefully, it will be found that we are apt to be unreasonable in the demands upon our scholars in regard to after-study. We enforce upon them what is expected when they leave school; yet society at large, and even their own friends and relatives, do very little by way of advice, active interest, or encouragement. Nay, many parents, who lead lives of idle pleasure, show the worst possible example. To the end that the race may make a real advance, generation by generation, the individual must begin where his progenitors left off; that is, he must be put in the way of learning in the most effective way what is already known.

Young people with unformed minds and habits suddenly becoming their own masters, with a tendency to exciting pleasures and self-indulgence rather than to quiet and self-denying study and investigation, cannot be expected to walk alone all at once; to consider that virtue is her own reward; and, in a trice, to evolve the highest conceptions of duty. They need counsel, tendance, and companionship. Thus, there is a pressing necessity for as complete an organization and a body of teachers for after-study as for first school life. It is not enough to say: "My young friends, I wish to inform you of the fact that all over the land there are picture galleries, museums, free libraries, continuation schools, and other educational institutions; mark all these possibilities for reading, culture, study, and experiment; find them out, introduce yourself, pay the charges, use them, profit by them."

We should bear in mind that, without a strong desire and a proper introduction, these helps might be used very unprofitably; yea, even, in a way tending to weariness and ultimate disgust. The story hid *behind* the book, the picture, the exhibit, or the experiment, may be veiled even from the keenest glance and most eager mind, save it be revealed by "one who knows." Is it too much to expect that those who have already mastered the various subjects and enjoyed the fruits of study should devote their energies to *imparting* as well as to *acquiring* knowledge, to *giving* as well as to *getting* objects of interest? The want of the age is for the aristocracy of learning to be broadened out into a democracy; to the end that sympathy, guidance, direction, encouragement, and reward might be furnished to those who have embarked on the wide sea of learning in their frail and trembling barques.

A Principle of Action.

It must be realized what a difficult position it is to take up and start from—viz., that of entering upon a certain course of self-denying study at the recommendation of another, without, at the start, any absorbing love for it or even any clear idea of ultimate success or reward. Such a possibility, as revealed to many, reminds one of the Siberian rivers, some of which idly lose themselves in the sandy plain. It should be the primary object of ourselves as Mentors to establish a principle of action, a duty to a higher power, to the students themselves, and to all others, their neighbours; we should clearly set forth the varying fortunes of the way, the end to be gained, and the triumphs that await upon the seeker after truth. We should make known the means, and furnish suggestions, sympathy, and active assistance; we should evoke, on their behalf, the virtues of companionship, the forces of emulation and legitimate display.

Again, it should be sternly realized that all these things are not wrought in a day, in a hocus-pocus kind of way; that there is no sudden or violent conviction or conversion, but that we must rather surround our pupils with an atmosphere, and see that they are in a state of grace. Lastly, we must be prepared to expend time, money, effort, and enthusiasm in organization and endeavour.

Difficulties to be removed.

Doubtless it is a counsel of perfection: but it must be acknowledged that, to carry our plans into execution, it would be necessary to burn down every existing school, and to wipe off the statute book all legislation relating to education, especially our laws of compulsion. In our ideal world it is fatal to seize the scholar by the scruff of the neck and haul him, all unwilling, to

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the master's desk. Compulsion awakens resistance, obstinacy, aversion to the teacher and to the thing taught. The excellent way is to cause the teacher to be sought after, rather than avoided, by the scholar. Should we apply this system of force and stress to the cultivation of art, music, and science, or to the production of a Gainsborough, a Beethoven, a Kelvin? No; spontaneity is the vital breath of education on the part, be it remarked, both of teacher and scholar. Education is a coy goddess: she must be sought for herself alone. If compulsion be a necessity, it should be looked upon as a cruel, a disagreeable, necessity—to be abandoned as soon as may be. It is degrading to force ourselves upon our scholars: we should rather wait to be entreated, and hold back till the learner felt his need. We ought to possess the characteristics of the educator and of the instructor, of course; but, better still, of the *inspirer* of youth, the quickener of the dulled intellect, the one above all others to light the torch, to fire the imagination, to lead the way, to say not "Go!" but "Come!"

It is worse than useless to scold, to threaten, to say: "You *should* do this or that"; "You *should* be this or that"; "You *ought* to love good literature; you are wrong and foolish if you do not"; altogether in the spirit of the schoolmaster who is reported to have said to his form: "You ought to be pure in heart; and, if you are not, I will flog you until you are." That is often the mental attitude assumed with reference to our scholars. We are so convinced of the necessity of a good education, of the elevating tendencies of literature, of the glory of science, of the gratification to be derived from a well ordered mind, of the obligation under which we lie to fill our life, enlarge our interest, and refine our character, that we are possessed with disappointment and alarm when we find that these considerations are not self-evident to others; but that the idea arouses indifference, and even aversion, in some of our scholars, who obstinately refuse to have anything to do with the improvement of their minds or the work of self-culture when they pass out of our hands.

We repeat, it is of no use to scold, to argue, to quote our own experience; in this region coercion entirely fails. The lives of those addressed are probably lived on another plane, their home experience is entirely different, their line of life widely divergent from that which lies straight forward to *our* goal. Our end must be gained by indirect means and by slow degrees; by awakening interest, by causing certain facts to dawn upon the minds of these young people, by surrounding them with illustrations from all sides, by evoking a personal and active interest in the successive unfolding and development of fact.

Two women might spend the same amount upon their dress, and even wear the same materials; but the one might be "torn out" in garish and unbecoming fashions, whilst the other might be perfectly dressed. Why? Because the first would have no eye for colour, whilst the other would be possessed of exquisite *taste*. But the former could not be taught to dress like a true lady merely as a result of a single lesson in colour and form; she would require to pass through a gradual transformation in point of *character* before the result could be attained and the change evidenced to the outward eye.

The Teacher.

Some teachers might be found who would regard the present state of things and all belonging to it—the curriculum, time-table, inspection—as the *ne plus ultra* of effort and perfection; who would look upon the result, imperfect as it is, as the best obtainable; nay, more, who would be disinclined to make the smallest effort to get out of the groove, to raise the standard, and to strain the wine from the lees. Such individuals think they have finished their education when they leave the training college; and that their only end in life, as teachers, is to repeat, parrot-like, before their class, day by day, the pet formulæ they have assimilated—the same old lesson in the same old way. It takes a long time for them to realize that one never gets out of one's self more than is put in. Like the Bourbons, they learn nothing, they forget nothing. A teacher like unto this may impart much knowledge, very little of which is calculated to stick. He may make a great din and clatter, but it is all of "sound and fury," signifying nothing. He builds an arch, but forgets to insert the keystone; he teaches, but does not cause to learn. Far different is the instructor, the true pedagogue, who is fired with a sense of his mission. He brings out of his treasure daily things new as well as old, for he takes all Nature for his province, and is always learning. He never repeats a lesson—even the simplest and most familiar—without studying it afresh, putting old truths in a new setting, gleaning experience from each repetition to render his words more adaptable to the slender apprehension of those he addresses. Such a man may not become a universal genius, for the day of universal geniuses is past—although a teacher should merit the designation more than any other man—but he will furnish an effective means to bring about an effective end.

As an embodiment of all our needs then, *this* is needed, namely, the true, refined, cultivated—or, rather, cultured—teacher; not the pedant, the purveyor of trifles of useful information, the hewer of wood and drawer of water in the arid field of knowledge; but the seer, the prophet, the pioneer, who holds the master-key to unlock the secrets of Nature—so jealously guarded, yet so freely offered—the friend and companion to the young mind, to point to fairer worlds and lead the way!

MEETING OF THE COUNCIL OF THE COLLEGE OF PRECEPTORS.

A MEETING of the Council was held at the College, Bloomsbury Square, on November 19. Present: Dr. Wormell, Vice-President, in the Chair; Mr. Armitage Smith, Mr. Barlet, Rev. J. O. Bevan, Rev. J. B. Blomfield, Mr. E. A. Butler, Mr. Charles, Mr. Chettle, Miss Dawes, Mr. Easterbrook, Mr. Eve, Dr. Findlay, Mr. Hawe, Mr. Holland, Mr. Kelland, Miss Lawford, Sir Philip Magnus, Dr. McClure, Bishop Mitchinson, Mr. Morgan, Mr. Pinches, Mr. Rule, Mr. Starbuck, Rev. J. Stewart, Mr. Storr, and Mr. Vincent.

The minutes of the last meeting were read and confirmed.

The Secretary reported that the number of candidates entered for the approaching Certificate and Lower Forms Examinations was about the same as that for the corresponding examination last year.

The thanks of the Council were voted to the several heads of schools who had afforded facilities for the examinations conducted by the College for Certificates of Ability to Teach, and for registration under Reg. 5 (2) (*b*) of the Order in Council.

The report of the Special Committee on the proposals of the Consultative Committee for a system of School Certificates was considered, and its further consideration was deferred to a Special Meeting of the Council.

The report of the representatives of the College on the Joint Federation Committee was submitted, and it was resolved that counsel's opinion should be taken as to whether the proposals for federation under an amended Charter could be entertained legally by the College in their present form.

The report of the Examination Committee was adopted.

The report of the Finance Committee was adopted.

It was resolved that reports of Committees should, whenever in the opinion of the Committee it is thought advisable, be circulated among the members of the Council before their meeting.

The following persons were elected members of the College:—

Miss M. E. Findlay, B.A. Lond., 250 Trinity Road, Wandsworth Common, S.W.
Mr. C. E. Lacy, L.C.P., Ronaldsholme, North Finchley.
Mr. E. S. Letts, A.C.P., The Grammar School, St. Ives, Cornwall.
Mr. B. B. Thompson, Eastward Ho! College, Felixstowe.
Miss J. A. Warne, A.C.P., The College, Nightingale Lane, S.W.

The following books had been presented to the Library since the last meeting of the Council:—

By the AUTHORS.—Leonard and Salmon's Further Course of Practical Science.

By G. BELL & SONS.—Bell's York Readers (Infants' and Introductory); Baker and Bourne's Examples in Algebra; Borchardt and Perrott's New Trigonometry for Schools; Pendlebury's Arithmetical Test Cards, Scheme B, Standards III. and IV.

By A. & C. BLACK.—Taylor's Synthetical Maps—Indian Empire, British South Africa, Australia and New Zealand, and Minor British Possessions.

By W. B. CLIVE.—London University Guide and U.C.C. Calendar; Matriculation Directory, September, 1904.

By HACHETTE & Co.—Lallemand's Beissier's Les Mémoires d'un Moineau; Minoggio's De Witt's Histoire d'un Chien.

By MACMILLAN & Co.—Allcock's Theoretical Geometry for Beginners, Part IV.; Barnard and Child's New Geometry for Senior Forms; Burrows and Walters's Florilegium Tironis Graecum; Cotterill's Milton's Paradise Lost (Book VI.), Milton's Areopagitica, and Wordsworth's Poems and Sonnets; Creswell's Coleridge's Rime of the Ancient Mariner; Gibson's Treatise on Graphs; Perry and Reum's New French Course for Schools, Part I.; Scott's Talisman; Siepmann's Biart's Monsieur Pinson, and Word- and Phrase-Book to the same; Von Glehn's Desnoyers's Les Mésaventures de Jean-Paul Choppart, and Word- and Phrase-Book to the same; Winch's Macaulay's William Pitt.

By METHUEN & Co.—Anderson's Story of the British Empire for Children.

By RELFE BROS.—Haynes and Carter's Local Examination Geography of the World.

Calendars of University College, London; Royal College of Surgeons of England; King's College, London; City of London College; University College, Nottingham; and St. Thomas's Hospital Medical School.

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REVIEWS.

Napoleon.

(1) *The Life of Napoleon I.*; including new materials from the British Official Records. Cheap edition, in two volumes. (10s. net.) (2) *Napoleonic Studies.* (7s. 6d. net.) Both by J. Holland Rose, Litt.D. (George Bell.)

In all the essential qualities of historical composition—diligence and accuracy of research, balance of judgment, and effectiveness of presentment—Dr. Holland Rose's work stands easily first among the many biographies of Napoleon. The scale is reasonably large, and not deterrent; and the literary handling increases the interest. There is no need to insist on the importance of Napoleon in the field of modern history; and teachers of the subject, as well as the general reader, will be very glad to have at ready command so excellent and trustworthy an account of the part played by the great Emperor. The publishers deserve special acknowledgments for bringing out the work in such handsome form at a popular price.

The collateral volume of "Napoleonic Studies" is also most welcome. They deal with a dozen more important questions connected with the Revolution and the career and the personality of Napoleon. With the exception of four, they are now reprinted from various reviews where they appeared during the past decade, and the student will be very grateful for their publication in this convenient collection.

The first of the new essays reviews the "Idealist Revolt against Napoleon," with special reference to Wordsworth, Schiller, and Fichte, who "in all essentials were in accord alike in the reasons that moved them to hatred of the French Emperor and in their belief in the future deliverance of Europe from the burden of his domination." The essay on "Pitt's Plans for the Settlement of Europe" is fresh from the archives of the British Foreign Office, and the inquiry lies in the years 1795, 1798–99, and 1804–05. Though Pitt's life appeared to close "amidst scenes of almost unrelieved gloom and failure," yet his "plans" were far more lasting than those of the victor of Austerlitz." By his perception that "in the absence of ideal principles a balance of power is the only safeguard for the peace of Europe," and "of the means that were ultimately to conduce to its realization, Pitt rose to the level of that small and select band of statesmen who have moulded European policy far beyond the limits of their own age and of their own land." The essay on "Egypt during the first British occupation" (1801–02) is mainly based on "what is probably the first description of the condition of Egypt penned by a British official," now lodged in our Foreign Office Archives (Turkey, No. 36). It was written by Mr. William Hamilton (secretary to Lord Elgin, then our Ambassador at Constantinople), who "rendered signal service in helping to secure for this country the antiquities which now form so valuable a portion of the Egyptian collection in the British Museum." The haggling with General Menou over the famous Rosetta Stone is very amusing. In the last of the four new essays, "Austria and the Downfall of Napoleon," Dr. Rose deals with the version of the Napoleonic history presented by the State Papers of Vienna and the biographies of Austrian diplomatists—an instructive pendant to the British, French, and Prussian versions. The reprinted articles are concerned with the religious beliefs of Napoleon, Canning's "ulterior and highly statesmanlike aims" in sending the British expedition to Copenhagen in the autumn of 1807, an explanation of how Canning acquired the news as to the designs matured by Napoleon and the Tsar Alexander at Tilsit, the policy of Napoleon against British commerce, Britain's supply of food in the Napoleonic War (with bearings on future eventualities), the attitude of the Whigs to the French War (with preliminary general observations that invite criticism), the Prussian co-operation at Waterloo (to which we recently directed attention), and the detention of Napoleon by Great Britain. The twelve essays thus furnish a comprehensive collateral criticism, which will be found a most useful adjunct to the biographical narrative. Ten important "Notes and Documents" are placed in appendix; and there are two plans—of Rochefort and the Île d'Aix, and of Austerlitz.

Rational Geometry. By George Bruce Halsted, A.B., A.M. (Princeton), Ph.D. (Johns Hopkins). (Price $1.75. Chapman & Hall.)

Although so many books on elementary geometry are continually appearing, no apology need be offered for the publication of the present work. It has nothing in common with the ordinary text-book, except that it deals with the same subject. Prof. Halsted yields to none in his reverence for the marvellous work achieved by Euclid; nevertheless, he belongs to that school of mathematicians which maintains that Euclid's system is not infallible; that his theory is, in fact, built up from an imperfect and incomplete set of fundamental axioms to which he himself tacitly and, perhaps even unconsciously, added. In the opinion of Prof. Halsted and kindred thinkers it has become necessary, for the advancement of truth, that the system which has held sole sway for so many centuries should give place to another and a better one. Unlike many of the writers who undertake the task of reforming Euclid, Prof. Halsted shows no tendency to be content with less rigid proof: on the contrary, he urges the necessity for the utmost rigour; and this, we venture to think, is one of the strongest of his many strong claims to consideration. He asserts that the principles which form the groundwork of his book secure both greater simplicity and increased rigour for his demonstrations. Hilbert's "Foundations of Geometry" furnish the basis for the present treatise. Accustomed as we are to the small number of simply worded axioms which are met with in Euclid, it is somewhat difficult to acquire readily a comprehensive grasp of the five groups of "assumptions" considered essential by Hilbert, and, seeing that an authority as notable as Poincaré failed to detect the redundancy of one of Hilbert's "betweenness assumptions," no humbler mathematician need hesitate to reserve for a time any definite expression of opinion as to the exact extent to which Hilbert's "assumptions" are deserving of being regarded as unimpeachable. None, however, will dispute the care and the effort to attain perfection which mark the drawing up, the classification, and the enunciation of the "assumptions"; none can fail to recognize how in Prof. Halsted's hands they yield simple and delightful proofs of many of the propositions with which every student of mathematics is familiar. Four only of the five groups of "assumptions" are used in the present work, viz., those in which the ideas of "association," of "betweenness," of "congruence," and of parallelism claim attention. The Archimedean principle of continuity is avoided in demonstrating the theory of proportion, and in its place stands a sect calculus which furnishes for geometry an analogue to the operations of algebra as applied to real numbers. The associative, commutative, and distributive laws which govern algebra are shown to apply equally to the sect calculus for geometry. The charm of many of the author's methods of proof has been referred to: it exists in a marked degree in the sixth chapter, where the originality displayed in the solution of problems is specially attractive. When Hilbert's "Foundations of Geometry" appeared there at once arose in the mind a doubt as to the possibility—at any rate, at the present time—of adapting the system to the needs of the immature student; but the production of Prof. Halsted's work shows that no cause for the doubt really existed.

The Tate Gallery.

Pictures in the Tate Gallery. By C. Gasquoine Hartley. (12s. 6d. Seeley.)

This handsome volume is practically a short history of British painting in the nineteenth century. The story is, indeed, made to turn around the works exhibited in the Tate Gallery; but these are used only for illustration, and the book is not intended as a guide to the Gallery. The plan is occasionally hampered by the omissions in this national collection; but Mrs. Hartley does not fail to take account of the influences and names that are not directly represented here.

The introduction, narrating the origin of this National Gallery of Modern British Art, is followed by three chapters devoted to the *genre*, historical, and landscape painters of the early Victorian period. While fully admitting individual excellences, Mrs. Hartley lays stress on the low condition of art at the time and the need for the infusion of a new spirit. *Genre* and historical painting were dominated by the idea of telling an interesting story; and the legitimate objects of art were subordinated to the irrelevant interests of the subject. The tendency is apparent even in Landseer's animal paintings, in which, along with real power in this department, is seen the inclination to seek questionable and unreal sources of interest by giving human expression to his animals. In landscapes again conventional ideas prevailed, and scenes were painted, not as they were, but according to the established ideas of what they should be. Mrs. Hartley of course recognizes the great exception to this general-

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ization in Turner, and partial exceptions in others; yet the statement is true in regard to the ordinary work of the popular painters.

The *renaissance* of British painting that began about the middle of the century is traced with fullness and appreciation. The forerunners of the pre-Raphaelite movement are recognized in Dyce, Lewis, and especially Madox Brown; and separate chapters are given to Rossetti and Millais. It is much to be regretted that there is not a single representative of Holman Hunt in the Gallery; but Mrs. Hartley does him full justice. "Perhaps it may not be wholly fanciful," as she happily expresses it, "to say that Rossetti was the soul, Millais the body, and Holman Hunt the conscience of the movement: the first had inspiration, the second technical mastery, while the third had patience." As regards the essential nature and results of the movement, Mrs. Hartley shows how far it went beyond mere carefulness in details, according to the popular idea. "The sincerity, the simplicity, the depth of intention, and the personality realized in this work of Madox Brown and the triad of pre-Raphaelite brothers yielded abundant fruitage. It was these qualities which united in re-moulding British art."

Fully one half of the volume is devoted to the leading British painters in the second half of the century, the names being mostly grouped according to subject—imaginative, classical, poetic art, landscape, sea, animals, &c. Thus the works of Watts, Leighton, Alma-Tadema, Briton Riviere, and many others are passed in review, and their places appreciatively assigned in the history of British art. Mrs. Hartley sums up the whole in the statement that "the general trend of modern art has been in the direction of original expression," and that "this key-note of personality," though an outgrowth of the pre-Raphaelite revival, "has now become the common heritage of the British school."

The value of the work is greatly enhanced by twenty full-page collotype reproductions of representative pictures in the Gallery. The process is most successful in reproducing broad effects, but one occasionally feels a serious inadequacy in the rendering of details; yet the plates as a whole are very fine. Rossetti's "Ecce Ancilla Domini!" holds the place of honour as frontispiece; and among other striking reproductions are Millais's "Ophelia" and "Vale of Rest," Watts's "Love and Life," Albert Moore's "Blossoms," Leighton's "Bath of Psyche," Mason's "Wind on the Wold," and Henry Moore's "Catspaws off the Land."

The work is not merely a fine drawing-room volume or a handsome Christmas gift-book. To the Londoner it will serve as a competent summary of the history of modern British art, with the Tate Gallery as furnishing constant illustrations; while the visitor to London will find it a beautiful and instructive remembrancer of the time spent in the Gallery.

A Survey of English Literature.

English Literature: a New History and Survey from Saxon Times to the Death of Tennyson. By J. M. D. Meiklejohn, M.A. (6s. Meiklejohn & Holden.)

The manuscript of this book, the publishers tell us, was left unfinished by Prof. Meiklejohn; and Mr. John Cooke, M.A., of Dublin, assisted by Mr. S. A. O. Fitz-Patrick, of the Irish Intermediate Education Office, has revised it and supplied the unwritten chapters and sections. We find no indication of the precise division of labour, and infer that substantially the work may be regarded as Prof. Meiklejohn's. At any rate, it is he that has shaped its outline and method with distinctive freshness and good sense. The work runs to 650 pages, mostly of large open type, giving fair scope for a really intelligent representation of the general course of English literary development and a reasonably adequate statement of the personality and characteristics of the more important writers. This advantage has been jealously utilized by a careful selection of the details recorded and by the sustained employment of a plain and concise style, which yet attracts and holds the interest of the reader. There is little room for illustrative extracts, but no part of the space devoted to them is wasted: the examples are typical, and at the same time such as "arouse an intelligent interest in literature as a living force." In very many cases, too, brief opinions of the best critics are cited in smaller type; the selections are careful, judicious, and most suggestive, while pointing the way to further study of the several authors. Explanations of literary allusions, archaic terms, historic usages, and so forth, are presented in foot-notes, with the view of rendering the book self-sufficing; yet there is no sense of overloading the page. Appended are useful historical tables, showing the relation of the chief writers to national and foreign history, to political and other historical personages, and to contemporary literature. The volume is thus exceptionally effective for its purpose. Indeed, we doubt whether there is any other book of the class more likely to seize the mind of the student and bring him into really living contact with the literature of the country. It is handsomely got up and attractively and serviceably bound.

GENERAL NOTICES.

MATHEMATICS.

Elementary Pure Geometry, with Mensuration. By E. Budden, M.A. Oxon., B.Sc. Lond. (3s.; Parts I. and II. only, 2s. Chambers.)

The author is fully justified in calling this useful manual "a complete course of geometry for schools." It covers the whole ground, from the now accepted preliminary training in experimental geometry, through the theorems of Euclid's six books, to the mensuration of areas and the geometrical treatment of trigonometry, as far as the solution of triangles. The last Part introduces the methods of modern geometry, as well as a sufficient amount of geometrical conics and solid geometry to satisfy the fullest needs of a boy specializing in mathematics at school. It is a book that a good teacher may use with great advantage, but from the first it wants teaching. The early pages introduce some words—such as "angular," "coincident"—before they have been explained, much less defined; and the first definition of an angle (page 5) as a *figure* ignores the idea of an angle as formed by two lines one of which revolves, an idea which is not only nearer the true connotation but has been found practically to give rise to less confusion in the beginner's mind than any other suggestion. The proofs are clear, and in some cases original, especially those relating to ratio by both modes of treatment. We commend the book as likely, if skilfully taught, to enable a whole sixth form, and not a selected few merely, to get a good idea of the methods of advanced modern geometry before they leave school.

Elementary Plane Geometry: Inductive and Deductive. By Alfred Baker, M.A., F.R.S.C., Professor of Mathematics, University of Toronto. (2s. Ginn.)

Keenly alive to the importance of induction in geometrical as in all other science, the author outlines an interesting preliminary course of elementary training in geometry and employs inductive methods throughout. In this course accurate figures tested in numerous examples by careful measurement and the application of other experimental processes yield the material for a sufficient array of particular observations, and lead in due course to the enunciation of the general geometrical truth as the necessary inference to be drawn from the comparison of results.

Pitman's Scheme A Arithmetic, Book V. By W. H. Higden. 1s. net.

Teachers using "Pitman's Scheme A Arithmetic" will be glad that there is a teacher's edition. This is evidently a specimen volume. It contains both questions and answers, and also a quantity of material for practice in mental calculation. Many useful hints are offered to the young teacher, and a scheme is drawn up which allows the course of instruction provided for the school year to be evenly distributed over the period. Intervals are set apart for revision and examination.

The Metric System. By Georges Rousselle. Translated and adapted by R. Smith. (1s. 6d. net. London: Hachette. Paris: Gedalge.)

A comprehensive elementary account of the units and tables of the metric system, accompanied by an explanation of the arithmetic involved in their use and by a full complement of worked examples and unworked exercises. The principal units are illustrated by scale drawings, some of which are full size, and the tables connecting the principal and subsidiary units of measure and weight are clearly arranged in compact diagrams.

Decimals and the Metric System. (2d. Blackie.)

A reprint of a useful little book—one of the series known as "Blackie's Supplementary Arithmetics." On reissue the price has been reduced by one-third. But is it not a pity to burden children with the names of quantities that are not used, such as the dekare and the deciare?

We have before us *Bulletin I.* of the recently formed Association of Teachers of Mathematics in the Middle States and Maryland. The Society was organized about a year ago for the improvement of mathematical teaching, and its magazine gives the text of a series of papers read during the first session, together with an account of the constitution of the Association and a list of its members. It is the papers, of course, which principally concern the general body of mathematicians. These will be found of a very interesting character; for they deal not with side issues, but with topics of vital importance to one of the leading educational questions of the time. They may

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be looked upon, moreover, as, in a measure, representative of the ideas of a considerable section of the teaching community, whilst they constitute individually the direct expression of opinion of various able thinkers who have at heart the interests of mathematical science and the cause of ideal education. The papers, taken as a whole, are so instructive that it would be invidious to discuss one to the exclusion of others. We prefer to send the reader to the *Bulletin* itself with the assurance that it will repay a careful perusal.

The first number of the *Wiskundig Tijdschrift* (October), which we recently announced, offers a considerable variety of fresh and instructive articles. We may note as of more general interest a paper by Dr. A. van Thijn, of Assen, on "Het Onderwijs in de eerste Beginselen der Algebra" ("Instruction in the first Beginnings of Algebra"). We observe with pleasure that the writers are already familiar with *The Educational Times* and its *Mathematical Reprints*. The journal is well printed, the geometrical figures being particularly neat and clear.

ENGLISH LITERATURE.

The Belles-Lettres Series. (Heath.)

Messrs. Heath are embarking on a considerable enterprise—150 volumes, we understand, are in preparation—under the general editorship of Edward Miles Brown, Ph.D., Professor of the English Language and Literature in the University of Cincinnati. The First Section will include the main examples of English literature down to the year 1100. Of this section we have two specimens: (1) *Judith*, edited by Albert S. Cook, Professor of the English Language and Literature in Yale University (1s. 6d. net); and (2) *The Battle of Maldon*, with some "Short Poems from the Saxon Chronicle," edited by Walter John Sedgefield, Litt.D., Lecturer in Anglo-Saxon and English Philology in the Imperial University of St. Petersburg (1s. 6d. net). There are full literary introductions, brief notes on really important points, bibliographies, and glossaries. The treatment is thoroughly capable, special attention being given to the text in critical notes. In the "Judith" a page of the Cottonian MS. is reproduced. We have also two specimens of the Third Section, which is devoted to the English Drama: (1) *Eastward Hoe!* (Jonson, Chapman, and Marston) and *The Alchemist* (Jonson) in one volume, edited by Felix E. Schelling, Litt.D., Professor of English Literature in the University of Pennsylvania (3s. net); and (2) *The Good Natur'd Man* and *She Stoops to Conquer* (Goldsmith), with introduction and biographical and critical material by Austin Dobson, LL.D., the text collated by George P. Baker, A.M. (2s. 6d. net). Here, too, great attention has been paid to the text, and the introductory, explanatory, bibliographical, and glossarial matter is careful and scholarly. Each volume has an excellently reproduced frontispiece. In all the four volumes the type and general get-up are tasteful and agreeable, and the form is very handy. The Series makes a most promising start, and we have no doubt that it will help greatly to extend the knowledge of, and interest in, English literature.

The Sonnets of Shakespeare. Edited by H. C. Beeching, M.A., D.Litt. (3s. Ginn. Athenæum Press Series.)

A pretty and tasteful edition, with ample illustrative apparatus. The introduction handles very frankly all the disputed questions on the subject of the Sonnets. With regard to the date, Mr. Beeching suggests a test that, so far as we remember, is new, namely, "the argument from repeated expressions," on comparison with the plays: a suggestion, it seems to us, of substantial value, but requiring discreet application. "It must not be confused with the argument from what are called 'parallel passages': it is primarily an argument from the use of identical words, only secondarily from similar ideas." The various views on crucial difficulties are discussed shrewdly and with all necessary freedom, especially the more recent ones: we could have wished that Minto's criticisms had not been treated quite so incidentally. However, the reader will obtain a good summary of the more important considerations. Mr. Beeching writes with great force and charm. The notes are very full, interesting, and useful. We do not know of any edition likely to be more serviceable to students.

RELIGION AND MORALS.

Handbook to the Book of Common Prayer. By the Rev. Bernard Reynolds, M.A. (4s. 6d. Rivingtons.)

As might be expected from an Archbishop's Inspector of Training Colleges and Chief Diocesan Inspector of London, who is also a Prebendary of St. Paul's, this substantial volume will furnish ample practical help to teachers of the Prayer Book and the Catechism and to pupil-teachers preparing for their examinations, and it will prove most instructive to the general reader. Historical and doctrinal explanations are given lucidly, adequately, and in interesting form. The work has evidently grown from large experience.

MISCELLANEOUS.

Mr. Fisher Unwin publishes a timely and striking volume—*The Hungry Forties* (6s.)—depicting by descriptive letters and other testimonies from contemporary witnesses the deplorable conditions of "life under the bread tax" in all parts of the country. Names and addresses of the writers or witnesses are given in most, indeed in almost all, cases; and the language of the writers is left unpolished. It is a remarkably realistic presentation. A very effective introduction is furnished by Mrs. Cobden Unwin, containing many reminiscences of old inhabitants of Heyshott, Cobden's native village. A concluding chapter, by Mr. Brougham Villiers, draws the moral of the letters, which certainly "read like the records of a besieged city." There are two appropriate illustrations. The volume is liberally printed and attractively got up.

Mr. Brimley Johnson publishes three "Carpet Plays," edited by Lucian Oldershaw (6d. net each), suitable "for the drawing-room" at Christmastide, as well as at other times: (1) *Spoken Thoughts*, by Margaret B. Cross; (2) *The King's Command*, a comedietta in one Act, by Carlton H. Terris; and (3) *Two Old Children*, by W. Teignmouth Shore. They are simple and sprightly; and directions are carefully given in ample measure.

NEW EDITIONS AND REPRINTS.

Messrs. Macmillan publish a second edition of *Billiards Mathematically Treated*, by G. W. Hemming, K.C., Senior Wrangler of his year (3s. 6d. net). Some new matter has been introduced, "aimed mainly at an exact and exhaustive discussion of certain problems which were only slightly dealt with in the first edition." An able and clever work of curious interest.

Mr. Fisher Unwin issues a complete popular edition—the twelfth—of *The Lives of Robert and Mary Moffat*, by John Smith Moffat, with portrait and four illustrations (2s. 6d. net). A fine record of noble lives at a remarkably modest price.

Messrs Watts & Co. add to the Rationalist Press Association's series of "Cheap Reprints" John Stuart Mill's *Three Essays on Religion*, with Miss Helen Taylor's introductory notice (6d.); and a first series of *Lectures and Essays*, by Colonel R. G. Ingersoll, nine in number, with preface by Charles T. Gorham (6d.). Author's portrait on each reprint.

Mr. H. R. Allenson offers a "cheap edition" of Carlyle's *Sartor Resartus*, with explanatory and commendatory introduction by Jonathan Nield (6d.).

DIARIES.

Letts's Diaries (Cassell) are of long-proved convenience and utility. No. 11, three days on page, with a mass of useful information of a practical kind prefixed, and strongly bound (4s. 6d.); No. 13, similar, but smaller (2s. 6d.); No. 20, a dainty little thing for the vest pocket, three days on page (1s.); No. 25, 5 × 3½ in., weak in opening, with pencil (2s.); No. 32, foolscap, 13 × 8 in., week on page, interleaved blotting (1s. 6d.); No. 35, octavo, 7¾ × 5 in., week in opening (1s.); No. 44, quarto, 10 × 8 in., two days on page (2s. 6d.). Office Calendar, No. 2 (2s.), clear and neat. Daily Health Diary, by Eustace Miles, M.A., with illustrations by Miss J. M. Bloxam—a new comer, week in opening, 4¾ × 3 in., thin, compact, for the pocket (1s. 6d.). Each diary contains a coupon for accident assurance.

Pitman's Shorthand and Type-writing Year-Book and Diary (1s.), week on page, is mostly filled with information in great variety on these two subjects. The form is convenient.

CHRISTMAS GIFT-BOOKS.

II.

Historical Tales.

There seems to be a strong tendency to weave a private story into or about the narrative of some historical episode. Already we have "a story of the Russo-Japanese War"—*Kobo*, by Herbert Strang (5s., Blackie), whose personal experiences give local colour to the narrative. The English hero takes part in some of the most noteworthy naval actions of the struggle, and after some stirring adventures reaches General Kuroki's army in time for the Battle of the Yalu. Meantime he has been captured by Cossacks, has escaped, and has fought with a band of Manchus. The Japanese hero Kobo is an interesting study of a fine character, more or less typical. To readers of "Tom Burnaby" Mr. Strang will need no fresh recommendation. Illustrations by William Rainey, R.I.

Another spirited volume by Herbert Strang is *Boys of the Light Brigade*, a story of Spain and the Peninsular War (6s., Blackie). Colonel Willoughby Verner, late of the Rifle Brigade, furnishes an interesting historical introduction. The Light Brigade, he tells us, "was the name given to the first British Brigade of Light Infantry, consisting of the 43rd Light Infantry, 52nd Light Infantry, and the 95th Rifles, which were trained together as a war brigade at Shorncliffe Camp in the years 1803-1805, just a century ago, by General Sir John Moore, the Hero of Corunna." The young hero of the story—a subaltern in the 95th Rifles—goes through the famous Retreat and does brilliant service at Corunna, and afterwards shares in the heroic defence of Saragossa. The private story interwoven with the military element is sufficiently engaging and exciting, and the character sketches of the British Army of the time are full of interest and

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amusement. An excellent book for boys. Illustrations by William Rainey, R.I.

Yet another dashing story by the late George Henty—*By Conduct and Courage* (6s., Blackie); but "this is the last of Mr. Henty's great series of historical stories." Being laid in the days of Nelson, it is, of course, full of the vigour of the battle and the breeze. The hero is a boy from a Yorkshire fishing village, who has varied experiences with pirates, mutinous Cuban negroes, and the French, and eventually shares in the battles of Cape St. Vincent and Camperdown. His natural ability receives early and vigorous development and no inconsiderable rewards. Nelson himself is brought on the scene in operations on the coast of Corsica. The book is written with Henty's accustomed force and versatility. Eight illustrations by William Rainey, R.I.—With this we may place a group of three stories by Henty, the principal of which is *In the Hands of the Malays* (1s. 6d., Blackie), narrating a bustling adventure with Malay pirates in 1669, on the south-west of Sumatra. The second story, which is about three times as long, is concerned with the unravelling of a bank mystery; and the third, "A Frontier Girl," takes us out into the backwoods among the Red Indians. All the stories are graphically told and exhibit various moral qualities in action.

Captain F. S. Brereton presents *A Hero of Lucknow* (5s., Blackie), a tale of the Indian Mutiny of 1857. The heroes, two brothers, bear a hand in the defence of Cawnpore, from which they get away on the capitulation and before the massacre, but afterwards are separated. One of them is dragged to Lucknow, where he experiences thrilling adventures. Passing on to Delhi, he encounters Hodson, of Hodson's Horse, takes part in the assault (not without some personal damage), and finds his lost brother—also wounded. Thereafter he marches to the relief of Lucknow. The story is full of action and breathes the spirit of the terrible time. Six illustrations by William Rainey, R.I.

The Children's Crusade, by E. Everett-Green (3s. 6d., Nelson), utilizes a famous episode of the second decade of the thirteenth century to display certain adventures of three Frankish youths by land and sea. The outline of the mad project lies mainly in the background, and the chief part of the adventures lies among the Moors and afterwards in Egypt, though one of the heroes does reach Palestine—yet not in a Crusade. The story is brightly and deftly told, and the interest is steadily maintained. Four pretty illustrations, full-page and coloured.

Miss Gertrude Hollis places *A Slave of the Saracen* (2s. 6d., Nelson) in the seventh Crusade under Louis the Saint. The course of the Crusade, which is outlined in some detail, develops the qualities of the hero, who is in search of his brother Raimond, son of the Seigneur de Vendôme, who had been seized and carried off to the East by Jean de Clairvaux in private vengeance. The story is told with much vigour and address, and with unfailing interest. Two coloured illustrations.

The White Standard, by Eliza F. Pollard (2s. 6d., Blackie), is a very well written story centring in the ever attractive career of Joan of Arc. It opens, indeed, at the Court of James I. of Scotland, but quickly passes to France, the Princess Margaret going over to marry the Dauphin—and in her train three scions of noble family, who play important parts in the drama. These young people meet with many stirring adventures, and by and by come into close association with the Maid, who exercises a powerful influence upon them. The severer aspects of the real history are not too vividly presented, and the private story is deftly interwoven with the historical events. Four good illustrations by J. Jellicoe.

In the Fen country a foundling is called "God's bairn," and *God's Bairn*, by Dorothea Moore (3s. 6d., Blackie), is an admirable story of the Fens in the troublous times before and during the great Civil War. The hero is found as a baby on Christmas Eve, 1632, in the Church of Marlowe-in-the-Fens, by Master Gregory Awl, the ancient clerk and sexton. Whether the mystery of his origin be cleared up or no must be left to the discovery of the reader. Incidentally, too, will be unfolded the story of the great dam of Marlowe and why it was partially destroyed. A fresh, brightly written, and charming tale. Eight excellent illustrations by Paul Hardy.

Viva Christina! by Edith E. Cowper (3s. 6d., Chambers), narrates vividly the varied adventures of a young Highland youth in the British Legion under De Lacy Evans assisting Queen Christina of Spain against the Carlists in 1835-36. The marching, the fighting, and the other aspects of the campaign, though conveying a fair impression of the enterprise, only form a background for the private experiences, which are sufficiently mixed and exciting. The character drawing is very good. Six illustrations by W. H. C. Groome, R.B.A.

My Sword's my Fortune, by Herbert Hayens (6s., Collins' Clear-Type Press), is "a story of Old France"—in the days of the Regency, when Cardinal Mazarin was in power (1650-53). The youthful hero, De Lalande, goes to Court, to make his way and to restore the broken fortunes of his family. Plots, captures, escapes, fighting—there is no lack of excitement; and in the background is suggested some inkling of the conditions of the period. The plan is well conceived and effectively executed, and the interest is always fresh. Eight illustrations by F. C. Tilney, and excellent get-up.

The President's Scouts, by the same author (5s., Collins' Clear-Type Press), is "a story of the Chilian Revolution" that upset President Balmaceda. The hero, a boy of sixteen, goes out to his uncle, a wealthy engineer in Chili, high in favour with the President, and has a very adventurous time indeed. The narrative is vivid and exciting, skilfully managed and forcibly told. Eight illustrations by J. B. Greene.

Two very distinctive stories of the olden time are *The Thrall of Leif the Lucky* and *The Ward of King Canute*, both by Ottilie A. Liljencrentz (5s. each, Ward, Lock, & Co.). The first is "a story of the Viking days," the second "a romance of the Danish Conquest." Both are full of interest, written with dramatic power and literary charm, and instinct with the spirit of their times. The historical setting and colour has not been attained without prolonged study of the period. Both books are characteristically and skilfully illustrated with pictures and designs by Troy and Margaret West Kinney.

There is no lack of excitement and interest in *A Trusty Rebel*, by Mrs. Henry Clarke (3s. 6d., Nelson). The hero is at first a trusty friend of Perkin Warbeck, fully persuaded that his claims were just; but, when he becomes convinced of the imposture, he reverts to his allegiance to Henry VII., and regains his rightful title. The story is brightly written, with large knowledge of the period. Six coloured illustrations.

The Phantom Spy, by Fox Russell (2s. 6d., Nelson), moves in scenes of keen interest—smuggling, fighting, and hairbreadth escapes. The hero's name is appropriately Dare. "We all knows that Jack Dare is a wonderful man, and what another would find impossible he *don't*." One of the first things he does is to get out of General de Busset the French plans for the invasion of England, and he keeps well to the fore through the Peninsular War. The story is written with verve and with considerable force of characterization.

Tales of Adventure.

Dr. Gordon Stables is to the fore with "a story of wild adventures," *In Regions of Perpetual Snow* (5s., Ward, Lock, & Co.). Eustace Solomon Bumbleby-Fipps, from the great establishment of miscellanies in the City (E.C.)—and Croydon—and the Yorkshire Wolds—and Ilfracombe—seeks and finds sport in a northern Scottish county, among Canadian grizzlies and bad Injuns, among great implacable grey sub-Arctic wolves, "high up on the mountain-sides of the mighty Haramont" and elsewhere in the Himalayas, in Japan, in Eastern Siberia, &c. And he has enterprising companions, ladies as well as gentlemen. The course of the "Stormy Petrel" will be followed with constant keenness.

The War God and the Brown Maiden is from the active pen of Tom Bevan, and Warwick Goble furnishes it with eight illustrations (3s. 6d., Collins' Clear-Type Press). It breathes the romance of the sixteenth century and the Spanish Main. The hero, marooned on the unexplored coast of Mexico, has a rough time among the Aztecs, when the Brown Maiden—Huitzila (the Humming-bird)—proves helpful in view of sacrificial intentions of the priests of the War-God. A vigorous and stirring story, with a touch of pathos.

Where Flies the Flag, by Henry Harbour (2s. 6d., Collins' Clear-Type Press), links together the larger colonies by the adventures of two brothers. One of them ranges Canada from Montreal westwards, tries his luck at Klondike, turns cowboy, and then serves as a Canadian mounted rifleman in the South African War. The other, taking to the sea, gets shipwrecked (after escaping a shark's jaws) on the Australian coast, experiences the attentions of "the King of the Bush," and helps to quell a mutiny on the home voyage, when he falls in with his brother. So there is plenty of peregrination and racket. Six coloured illustrations by Arthur Rackham.

Flights of Fancy.

Open out *The Pedlar's Pack*, by Mrs. Alfred Baldwin (6s., Chambers), and you behold nine delightful stories, beginning with the Giant's baby and ending with the child that dropped from the clouds, with kings and queens, and princesses and fairies between. "There's that within this book suits young and old"—young especially. And there are nine coloured illustrations by Charles Pears, to say nothing of headpieces and tailpieces to each story; and the type is bold and open and the get-up handsome.

Mr. P. G. Wodehouse, turning aside from school stories, has audaciously burlesqued a venerable tradition in *William Tell told again* (6s., Black). "So much doubt has been cast on William Tell's doings—some going the length of saying that he never existed—that the publishers feel that this book should be a valuable contribution to the history of the great archer, as showing what it was that he really did." The argument would lead to very strange results, and we wish Mr. Wodehouse had selected another subject. There are 16 illustrations in colour by Philip Dadd; and J. W. Houghton provides descriptive verses in consonance with the tone of the narrative. In point of get-up it is indeed a "beautiful book."

Marvels of Fact.

A very charming volume, full of suggestion to older as well as to younger readers of a thoughtful turn, is *The Glamour of the Earth*, by

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George A. B. Dewar (6s. net, George Allen). Mr. Dewar makes one feel the spell, whatever the season, and whatever the conditions. He teaches delight in the garden, in the field, in the wood, and on hill and river, with an intimate familiarity and devoted appreciation that remind one of Richard Jefferies or William J. Long. Fifteen fine illustrations by R. W. A. Rouse, four of them photogravures. The book is beautifully printed and artistically produced.

The Rat, by G. M. A. Hewett (6s.), appears to be the first of the series of "Animal Autobiographies" projected by Messrs. A. & C. Black. Mr. Hewett speaks of the Rat as "my most intimate friend," and indeed there is no disputing the assertion after one reads the minute and most instructive story he draws from the animal's own lips. A curious and varied story it is, and it will be read with unfailing interest. Twelve full-page illustrations in colour by Stephen Baghot de la Bere. The series is an excellent idea, and not boys only, but also grown-ups, will find both interest and instruction in it. If the succeeding volumes maintain the standard of "The Rat," the series will be educationally valuable as well as popular.

Mr. R. Kearton, F.Z.S., this year relates *The Adventures of Cock Robin and his Mate* (6s., Cassell). The story is told by an old cock robin to his chicks night by night before they go to bed; and so here we have the truth of the matter, in the guise of fiction indeed, but really solid fact quite as wonderful as any fiction. Mr. Kearton has personally witnessed "nearly every strange happening related" in the book, and the rest are from reports of competent observers. It is thus a natural history book in the strictest sense, and a most interesting and delightful book it is. There are more than 120 admirable illustrations from photographs "taken direct from Nature by Cherry and Richard Kearton," and they are capitally reproduced.

Embroideries of History and Science.

Partly mythical, partly historical, with an imaginative setting of both the mythical and the historical elements, are *Tales from Plutarch*, retold by F. Jameson Rowbotham (5s., Fisher Unwin). There are four tales—the stories of Theseus, Romulus, Fabius Maximus, and Alcibiades. They are told in a fashion likely to help realization and to imprint lessons of conduct; the tone is excellent, and the interest is continuous. There are 8 full-page illustrations by Cecil Wilson, and finely worked initials and tailpieces by Amy B. Schultz; and the type is bold and agreeable.

A Tale of the Time of the Cave Men, by Stanley Waterloo (3s. 6d., Black), takes us back to the Age of Stone, and relates the doings of Ab from his babyhood, when he lay in his nest of beech leaves near the Running Water (not yet the Thames), which then ran to the Rhine, down to a green old age as mighty hunter and head of the people of the Fire Valley. While a strangely interesting romance to young people, it presents a scientifically imaginative aspect to their elders: "only once does the writer depart from accepted theories of scientific research"—he concludes that "no convulsion of Nature, no new race of human beings, is needed to explain the difference between the relics of Palæolithic and Neolithic stragglers." A book of absorbing interest. Eight illustrations in colour by Simon Harmon Vedder.

Stories of the School.

Let "School" bear an elastic connotation for the sole sake of *Godfrey Marten, Undergraduate* (6s., Heinemann), for it is a year since we read of him as a "Schoolboy." Mr. Charles Turley achieved a marked success in describing his hero's school life; and now he has thrown that achievement into the shade by an admirable narrative of the various experiences of his undergraduate life at St. Cuthbert's, Oxford. There is no aspect of that life but he has represented with sober truthfulness, touched with a quiet yet incisive humour. A solidly good book all through; and liberally and tastefully got up.

Out of the Running, by Harold Avery (2s. 6d., Collins' Clear-Type Press), is frankly "a school story," with plenty of football and bicycle, and incidents thereto appertaining both naturally and exceptionally, and we must not forget the "cure for toothache." A good bustling all-round story. Six coloured illustrations by John Cameron.

By a Schoolboy's Hand, by Andrew Home (A. & C. Black), while providing abundance of youthful interest, and exhibiting a manly spirit, is written in capital style and with inventive and descriptive power. Among other school affairs, something turns on a scholarship, something more on a cheque; there is the scent of the sea, and the doings of smugglers, and adventures on a coasting brig, and "the Hermit of Gull's Island." Certainly "Dick's a trump." Eight illustrations in colour, by Strickland Brown.

The Gold Bat, by P. G. Wodehouse (A. & C. Black), turns on the vicissitudes of "a small gold ornament shaped like a bat"—"about an inch long by an eighth of an inch wide"—specially fashioned, by the liberality of the head master, "for the captain of the winning team to have and to hold." So there are house-matches, and ferrets, and so forth, and the general incidents of school life, set forth with some freshness and considerable vigour, if not with the artistic restraint that the author should be developing now. Eight spirited full-page illustrations by T. M. R. Whitwell.

Brought to Heel, by Kent Carr (5s., Chambers), is a nervous, clear-cut story of "the Breaking in of St. Dunstan's" by the new head master. We are not quite sure about the propriety of Mr. Firth's allowing little Belloc's tongue to run so freely without warning at their first meeting, or of the probability of such conduct as the second master's in preparation for "the great bar-out"; but, in any case, the development of the proceedings is shrewdly conceived and vigorously worked out, and the most rebellious of boys will be fascinated with the quelling process. There is a local difficulty also woven into the school story—a difficulty settled in a very surprising way, tending to the general final result. One of the very best boys' books of the season. Eight drawings by Harold Copping.

A School Champion, by Raymond Jacberns (3s. 6d., Chambers), is a very lively and piquant story of two little girls, of thirteen and ten, who had "only learnt what we liked to learn, and father liked teaching those things more than stupid old arithmetic and geography." So when they went to Lyndhurst College they found themselves in a very different world. Being of a military family, they had naturally been fond of heroic stories, and thus took to the idea of "championing." The complications of the situation are prettily worked out. The get-up is excellent, and there are ten good drawings by Percy Tarrant.

Partners, by H. F. Gethen (1s. 6d., Nelson), tells school experiences of a bright boy of ten, with frequent glimpses of a sister of eight, in fluent and pleasant style. Tom and a schoolfellow go "partners," and there eventually arise difficulties straining the relation, but we dare say they prove but temporary. The school affairs are sufficiently varied and exciting, and they are described with much verve. Eight illustrations in colour by P. B. Hickling.

Jefferson Junior, by Meredith Fletcher (3s. 6d., Blackie), relates the first term's adventures and misadventures of two boys at a public school. They fall in with each other on the way up, and the younger is awed to find that the elder is brother to the captain of the school, and gratified with his promise to befriend him. On arrival, Jefferson Junior "makes things hum with a vengeance." A sprightly and vigorous story. Six illustrations by J. R. Burgess.

For Girls.

Mrs. W. K. Clifford is about her best in *The Getting Well of Dorothy* (3s. 6d., Methuen)—a very charming story of two little girls, especially Dorothy. Neither Celestine (the doll) nor the rabbit from Paris did it, nor yet the sojourn at grandmamma's in Devonshire; Gibraltar and quince jam were probably more effective; and there was a wandering period in Switzerland. At last she got well, indeed; and the end is the coming of the kitten, which, though vigorously stroked the wrong way night and morning, has only grown into a big black cat, "and hasn't come Persian yet." The little folks will be delighted with it all. Twenty-six illustrations by Gordon Browne.

Hope's Tryst, by Bessie Marchant (3s. 6d., Blackie), turns on the courage and honest simplicity of a young girl—the daughter of an English merchant at Kiakhta, on the borderland between Siberia and Mongolia, whose main object was to rescue his brother from unjust internment in the mines. The brother escapes into the forest, however; a Russian friend of Hope's gets implicated in gold smuggling, and one night Hope keeps a tryst for her at the edge of the forest of Taiga—in spite of the long-drawn mournful howl of the wolf; and thereout issue complications. The story is told in excellent tone, and the interest is fresh and continuous. Six illustrations by James F. Sloane.

The Girls of Wakenside, also by Bessie Marchant (5s., Collins' Clear-Type Press), involves school a little, but is mainly a matter of ups and downs, surprises, and mystery deepening to the clue, with the usual sort of ending, only three-fold. The scenes are mostly enacted in the Kootenay country, in the Rockies, but they might, with small alterations, be equally well enacted elsewhere. The interest is briskly maintained. Eight illustrations by G. Leslie Hunter.

Mrs. L. T. Meade makes herself responsible for *A Madcap* (3s. 6d., Cassell)—a young Spanish *señorita*, who comes to England to take possession of property she has inherited and meets with trials and troubles enough. The contrast between her and her English cousins is sharply outlined. She may not be quite the pink of perfection, but Mrs. Meade treats her very sympathetically, and describes her difficulties vividly and interestingly. Eight full-page illustrations by Harold Copping, and very tasteful get-up.

Peerless Women, by Jeanie Douglas Cochrane (1s. 6d., Collins' Clear-Type Press), consists of eleven good popular biographies, with four coloured illustrations and inset portraits of the ladies, not flatteringly reproduced. The "peerless women" are Queen Victoria, Sister Dora, Mary Carpenter, Sarah Robinson, Agnes Weston, Baroness Burdett-Coutts, Florence Nightingale, Mrs. Isabel Reaney, Mary Ann Rogers, and Frances Power Cobbe. Very well; but surely there are equally "peerless" women not in the number. Perhaps they will follow.

Mrs. Edwin Hohler weaves a pretty little story about the Palazzo Rosso—*The Deserted Palace* (1s., Blackie)—vaguely situated "on the shores of the sunny Mediterranean." The explorations of Tony and Olivina will be followed with interest, and perhaps the mystery of the picture whose eyes changed colour will be explained. We must not tell what came of the pursuit of that purple hen intended for the Festa.

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For Little Ones.

In *The Little Folks Adventure Book* (3s. 6d., Cassell) Mr. S. H. Hamer relates in graphic fashion more than thirty stirring stories of youthful adventure by land and by sea—daring deeds, fights with flame and flood, hairbreadth escapes, episodes of the sea, the cliff, the hunting-field, &c. The illustrations are numerous and good, and the get-up is attractive.

To Mr. Hamer's diligent pen is also due *The Little Folks Animal Book*—stories about animals, several of them told by the animals themselves (3s. 6d., Cassell). The interest is fresh and varied; the stories are told with much address; and there are many good illustrations, with a coloured plate as frontispiece.

Grandmother Pussy, by Edith Carrington (Cassell), who has already written (among many other things) about "The Cat, her place in Society," and ought to know, makes a very interesting story indeed, reported by the heroine herself. There are eight full-page illustrations and forty-one smaller pictures.

Sea Stories for Wonder Eyes, by Mrs. A. S. Hardy (2s., Ginn), is a simple and delightful account of various marvels of the sea-shore and the sea, in beautiful type and binding, and with abundance of pretty illustrations.

Little Folks of Many Lands, by Lulu Marie Chance (2s., Ginn), is a similarly simple and attractive sketch of certain race types—Indian, Eskimo, Dutch, African, Arabian, Japanese, and, of course, Filipino—four girls and three boys—in excellent type and artistic get-up, with numerous illustrations, the full-page ones in colour.

Messrs. Nelson furnish forth most spaciously and handsomely a selection of *La Fontaine's Fables*, pictured for children by Carton Moore Park and René Bull, and translated from the original into English verse by Edward Shirley (5s.). Really a work of art, and certain of general popularity.

Claws and Paws, by Louis Wain (2s. 6d.), with verses by Clifton Bingham, depicts various aspects of "Kittenland" in a way that will delight the nursery. After diligent search, we regret to acknowledge that we find no clue to the well-deserving publishers.

Snap-Shots for Small People, by Winifred Rose Carey, with 20 coloured pictures by Margery Helen Carey (1s. net, Swan Sonnenschein), has the general appearance of an "Oogley-Oo" book of superior quality. There is fun in the pictures, and there is usually a sting of satire in the tail of the verses.

Careless Jane, and Other Tales, by Katharine Pyle (2s. 6d., Chambers), is lavishly illustrated and tastefully got up. There are twelve "other tales"; and all the thirteen are briefly told in verse, with a moral thrust in somewhere about the end. Children will be delighted with the pictures anyhow.

The Golden Windows, by Laura E. Richards (2s. 6d. net, Allenson), is "a book of fables for young and old"—some 40 or 50 fables, simply written with good moral intention. The get-up is tasteful.

The Twins (6s., Nelson) are depicted in 24 large coloured pictures by John Hassall, and in explanatory verses by Edward Shirley. As the one is alleged to be "the very best boy that ever was seen," and the other "the very worst," the variety of aspects is naturally considerable and piquant. The book is handsome, as well as lively and amusing.

Sea and Sand (3s. 6d., Nelson) is another pretty book of pictures—twenty, we should think—recalling or anticipating the delights of a seaside holiday—by Ruth Cobb. The verses are again supplied by Edward Shirley. This too should be a general favourite.

Cheepy the Chicken, by Harry Rowntree and S. H. Hamer (1s. 6d., Cassell) is a wonderful account of the experiences of a discontented chicken, which gets changed successively into several other kinds of animals. There are 4 coloured plates and numerous amusing illustrations.

Of a more sober character is *True Stories about Animals*, by Edith Carrington (2s., Blackie)—a very interesting series of anecdotes about animals of many kinds, abundantly illustrated in colour and in black and white. The first portion of it appears separately as *True Tales of Animal Life* (6d., Blackie)—a pretty "picture-book for little folk."

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Messrs. Macmillan issue a revised and enlarged edition of *The Golden Treasury of Songs and Lyrics*, by Francis T. Palgrave, in green limp leather, full gilt back and gilt edges (3s. 6d.)—a very artistic and charming volume.—Also delightful editions of *Alice's Adventures in Wonderland*, with 42 illustrations by John Tenniel (2s. net), and *Through the Looking-Glass*, with 50 illustrations by John Tenniel (2s., net)—both in the attractive series of "Illustrated Pocket Classics for the Young."—*The Story of a Red Deer*, by the Hon. J. W. Fortescue (2s. net)—a most interesting sketch of "the most beautiful of all creatures to the eye"—reappears (after half-a-dozen reprints) in the same series.—Moreover, *The Story of Sylvie and Bruno* (Lewis Carroll, 3s. 6d. net)—containing such portions of the two original volumes as tell the tale of the two fairy children—with numerous spirited illustrations by Harry Furniss.

The New Pupil, with illustrations by Gertrude Demain Hammond, and *Three Rascals*, with illustrations by Ella and Agnes Tomlinson, both capital stories by Raymond Jacberns, are reissued in very agreeable and handy forms by Messrs. Macmillan (2s. 6d. each).

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We find no express statement that *In the Icy North* (Arctic Explorers: Franklin and Nansen), by Henry Harbour, and *Two Old Sea Dogs* (Drake and Blake), by Herbert Hayens (1s. 6d. each, Collins' Clear Type Press), are reissues, but we take it they are; and, anyhow, they are good as new to a new set of readers. They are very instructive as well as entertaining, and both are illustrated (the former more freely) and nicely got up.

Annuals.

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MATHEMATICS.

8059. (T. Muir, LL.D., F.R.S.E.)—Prove that the Pfaffian

$$\begin{vmatrix} a_1+a_2, & a_1+a_3, & a_1+a_4, & \dots, & a_1+a_{2n} \\ & a_2+a_3, & a_2+a_4, & \dots, & a_2+a_{2n} \\ & & a_3+a_4, & \dots, & a_3+a_{2n} \\ & & \dots & \dots & \dots \\ & & & & a_{2n-1}+a_{2n} \end{vmatrix} = 2^{n-1}(a_1a_3a_5\dots a_{2n-1} + a_2a_4a_6\dots a_{2n}).$$

Solution by Professor Nanson

Let P denote the Pfaffian and Δ the generating zero-axial, so that $\Delta = P^2$. Then P is of the first degree in each frame line and therefore of the form $\lambda a_1a_2 + \mu a_1 + \nu a_2 + \rho$, where λ, μ, ν, ρ do not contain a_1, a_2. Next, Δ contains no term with $a_1^2a_2^2$ as factor and has two rows identical if $a_1 = a_2 = 0$. Hence $\lambda = 0$, $\rho = 0$. Further, Δ is unaltered by a cyclic interchange of the suffixes 1, 2, ..., $2n$. Hence $\mu = \nu$ and P is of the form $k(a_1a_3\dots a_{2n-1} + a_2a_4\dots a_{2n})$, where k is numerical. Now, making $a_1 = a_2 = \dots = 1$, the terms of P are each numerically 2^n, and of these terms there is one more positive than negative. Hence $k = 2^{n-1}$.

15629. (A. W. T.)—A number is raised to the power (-1) and reduced to a decimal. It is found that the original number is just n times the digit nearest the decimal point. Find the limits between which the number lies.

Solution by Lt.-Col. Allan Cunningham, R.E.

Let a_1, a_2, ... be the digits of 1/N, expressed as a decimal, and let a_r be the first digit greater than 0 ($a_1 = a_2 = \dots = a_{r-1} = 0$). Then $N > 10^{r-1}$, but $< 10^r$, and $N = n.a_r$. Also $1/N = a_r/10^r + a_{r+1}/10^{r+1} + \dots$. Hence (except when a_r is the only finite digit)

$$1/N < a_r/10^r \quad \text{and} \quad 1/N < (n.a_r)/(n.10^r) = N/(n.10^r),$$

whence $N > \sqrt{(n.10^r)}$. Hence $N > \sqrt{(n.10^r)}$, but $< 10^r$.

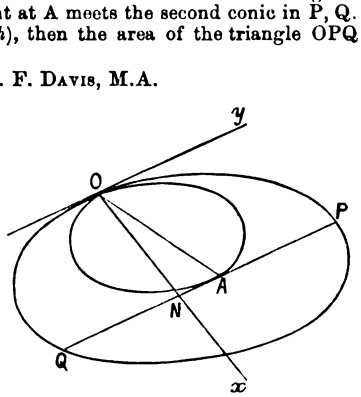
Also $N^2 > n.10^r$, whence $N > n(10^r/N)$. Hence $N > n$ (because $10^r/N > 1$). This lower limit of N is not so high as the previous one [$N > \sqrt{(n.10^r)}$], but has the advantage of not involving r.

15527 (with changed notation). (L. Isserlis.)—Two conics touch at O. The distances of their centres from the tangent at O are h, H and their radii of curvature at O are r, R. The diameter of the first through O meets it again in A and the tangent at A meets the second conic in P, Q. Prove that, if $1/h - 1/H = 1/\sqrt{(rh)}$, then the area of the triangle OPQ is $4R^{\frac{1}{2}}r^{-\frac{1}{2}}h^{\frac{1}{2}}$.

Solution by R. F. Davis, M.A.

If (h, k) are the co-ordinates of the centre of the first conic referred to the normal at O as axis of x and the tangent at O as the axis at y, the equation to the conic is

$$(k^2+hr)x^2 - 2hkxy + h^2(y^2-2rx) = 0.$$



Similarly, the equation to the second conic is

$$(K^2+HR)x^2 - 2HKxy + H^2(y^2-2Rx) = 0.$$

The co-ordinates of A are of course $(2h, 2k)$, and the equation to the tangent at A is $x = 2h$.

To determine P, Q we have

$$4h^2(K^2+HR) - 4HKhy + H^2(y^2-4Rh) = 0,$$

$$y^2 - \frac{4Kh}{H}y + \frac{4h^2(K^2+HR) - 4H^2hR}{H^2} = 0;$$

therefore

$$(PQ)^2 = (y_1 \sim y_2)^2 = (y_1+y_2)^2 - 4y_1y_2$$

$$= \frac{16K^2h^2}{H^2} - \frac{16h^2(K^2+HR) - 16H^2hR}{H^2}$$

$$= 16hR - 16h^2R/H = 16Rh(1-h/H).$$

$$4(\text{area } \Delta OPQ)^2 = PQ^2 . ON^2 = PQ^2 . 4h^2;$$

therefore

$$(\text{area } \Delta OPQ)^2 = 16Rh^3(1-h/H).$$

This result does not involve r; which is not to be wondered at.

Note also the expression for the area vanishes when $h = H$. In this case the line $x = 2h$ is a tangent to both curves.

If now the condition $1/h - 1/H = 1/\sqrt{(rh)}$ be introduced, the above expression for Δ takes the form given in the Question.

15438. (G. Heppel, M.A.)—P is any point within a circle. APA′ BPB′, CPC′ are three chords making angles of 120° with one another. Prove that AP + BP + CP = A′P + B′P + C′P, and that each ranges between 3 and $\sqrt{3}$ times the radius.

Solution by the Proposer.

O is the centre; OK is at right angles to PA′, the longest line from P; DL, EM are projections of OK on BB′, CC′; then

DL = EM. PD = PE = ½PK,

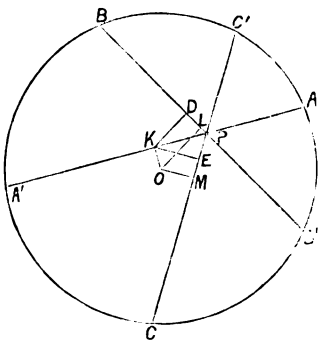
BP − B′P = 2PL = PK − 2DL,

CP − C′P = 2PM = PK + 2EM,

AP − A′P = −2PK;

therefore

AP + BP + CP = A′P + B′P + C′P.



The maximum limiting case is when P is at O, and then the sum is $3r$. The minimum limiting case is when P is on the circumference, and one chord, as BB′, becomes a tangent; then A′P and CP are each $r\sqrt{3}$ and BP, B′P, C′P, AP all vanish.

Note by Constance I. Marks, B.A.

The two solutions furnished to this Question (*cf. Reprint*, New Series, Vol. VII., p. 91) are in perfect agreement, since the lower limit is actually reached only when P ceases to be *within* the circle and when one of the chords ceases to be a *chord* and becomes a *tangent*.

15471. (Rev. T. Roach, M.A.)—Prove

(1) $\cosh^{-1}(\sec x) = \log\cot(\frac{1}{4}\pi - \frac{1}{2}x)$ or $\log\tan(\frac{1}{4}\pi - \frac{1}{2}x)$;

(2) $\sinh^{-1}(\tan x) = \log\cot(\frac{1}{4}\pi - \frac{1}{2}x)$ or $\log\tan(\frac{1}{4}\pi + \frac{1}{2}x)$.

Solutions (I.) *by* W. Scrimgeour, M.A., B.Sc., *and others*; (II.) *by* W. R. Bruce.

(I.) (1) Let $\cosh^{-1}(\sec x) = y$; therefore $\cosh y = \sec x$; therefore $\frac{1}{2}(e^y + e^{-y}) = \sec x$. Solving for e^y, after reducing,

$$e^y = \sec x \pm \sqrt{(\sec^2 x - 1)};$$

therefore $e^y = \sec x + \tan x$ or $e^y = \sec x - \tan x$;

therefore

$$e^y = (1+\tan\frac{1}{2}x)/(1-\tan\frac{1}{2}x) \quad \text{or} \quad e^y = (1-\tan\frac{1}{2}x)/(1+\tan\frac{1}{2}x);$$

therefore $y = \log\tan(\frac{1}{4}\pi + \frac{1}{2}x)$ or $y = \log\tan(\frac{1}{4}\pi - \frac{1}{2}x)$;

therefore $\cosh^{-1}\sec x = \log\cot(\frac{1}{4}\pi - \frac{1}{2}x)$ or $\log\tan(\frac{1}{4}\pi - \frac{1}{2}x)$.

(2) Similarly, let $\sinh^{-1}(\tan x) = z$; therefore $\sinh z = \tan x$; therefore $\frac{1}{2}(e^z - e^{-z}) = \tan x$. Therefore, solving for e^z, as before,

$$e^z = \tan x \pm \sqrt{(\tan^2 x + 1)};$$

therefore $e^z = \tan x + \sec x$ or $e^z = \tan x - \sec x$;

therefore $e^z = (1+\tan\frac{1}{2}x)/(1-\tan\frac{1}{2}x)$

or $e^z = (1-\sin x)/-\cos x = (\tan\frac{1}{2}x - 1)/(\tan\frac{1}{2}x + 1)$;

therefore $z = \log\tan(\frac{1}{4}\pi + \frac{1}{2}x)$ or $z = \log\tan(\frac{1}{2}x - \frac{1}{4}\pi)$.

This is negative when $x < \frac{1}{2}\pi$; therefore

$$\sinh^{-1}(\tan x) = \log\cot(\tfrac{1}{4}\pi - \tfrac{1}{2}x) \quad \text{or} \quad = \log\tan(\tfrac{1}{4}\pi + \tfrac{1}{2}x).$$

Note.—The common value of (1) and (2) is $\log\cot(\frac{1}{4}\pi - \frac{1}{2}x)$, the inverse Gudermannian of x. Thus

$$\cosh^{-1}(\sec x) = \sinh^{-1}(\tan x) = \log\cot(\tfrac{1}{4}\pi - \tfrac{1}{2}x) = gd^{-1}x$$

when only the positive value of the above radicals is taken, as in finding, say, $\cosh^{-1}y$.

(II.) We know that

$$\cosh^{-1}(\sec x) = \log[\sec x + \sqrt{(\sec^2 x - 1)}] = \log(\sec x + \tan x) = y \text{ (say)}.$$

Differentiating, we have

$$dy = [(\sec x\tan x + \sec^2 x)/(\sec x + \tan x)]dx = \sec x\,dx = dx/\cos x.$$

Therefore $y = \int dx/\cos x = \log\cot(\frac{1}{4}\pi - \frac{1}{2}x)$,

which is a well-known integral.

The solution $\log\tan(\frac{1}{4}\pi + \frac{1}{2}x)$ follows at once.

To show that $\sinh^{-1}(\tan x) = \log\cot(\frac{1}{4}\pi - \frac{1}{2}x)$, we have

$$\sinh^{-1}(\tan x) = \log[\tan x + \sqrt{(\tan^2 x + 1)}] = \log(\tan x + \sec x) = y \text{ (say)}.$$

Therefore

$$dy = \sec x[(\sec x + \tan x)/(\sec x + \tan x)]dx = \sec x\,dx = dx/\cos x.$$

Therefore $y = \int dx/\cos x = \log\cot(\frac{1}{4}\pi - \frac{1}{2}x)$ or $\log\tan(\frac{1}{4}\pi + \frac{1}{2}x)$.

15371. (Professor Neuberg.)—Trouver le lieu des centres des hyperboles équilatères qui passent par deux points donnés A, B et dont une asymptote passe par un troisième point donné C.

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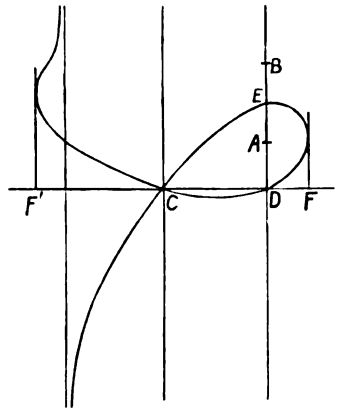
Solutions (I.) *by* A. M. Nesbitt, M.A.; (II.) *by* Professor Sanjána, M.A.

Take C for origin, and let the co-ordinates of A, B be (c, a), (c, b). Let the equation to the asymptotes be $y = mx$, $my + x = h$. Then the equation to the curve will be

$$(y - mx)(my + x - h) = k^2,$$

and we have at once

$$(a - mc)(ma + c - h) = (b - mc)(mb + c - h).$$



But, if x, y be the co-ordinates of the centre (*i.e.*, of the intersection of the asymptotes), we have

$$m = y/x,$$

$$h = x(1 + m^2) = (x^2 + y^2)/x;$$

whence the equation to the locus is

$$x(x^2 + y^2) = xy(a + b) + c(x^2 - y^2),$$

a circular cubic with $x = -c$ as its real asymptote and a real double point at C. The locus will be found to cut the x axis at D, and, if CF = CF' = CE, where E is the middle point of AB, then CF and CF' are the limits of x for *real* values of y.

Moreover the curve passes through E, the values of dy/dx at D and E being respectively $c/(a + b)$ and $-\{c^2 - [\frac{1}{2}(a + b)]^2\}/[c - (a + b)]$; and at the double point the two values are of opposite sign. The curve cuts the asymptote at the point whose ordinate is $2c^2/(a + b)$; hence it is approximately as depicted.

[Rest in *Reprint*.]

9308. (Professor Nilkantha Sarkar, M.A.)—A uniform rod rests in a horizontal position, being supported by two smooth pegs equidistant from its centre. If the distance between the pegs $= 1/\sqrt{3}$ times the length of the rod, prove that, if one of the pegs be suddenly removed, the pressure on the other will be initially unaltered.

Solution by Frances E. Cave.

Let θ be the inclination of the rod to the horizon at any instant before it leaves the second peg, r the distance of its centre from the peg, P the pressure. With the usual notation,

$$mk^2\ddot{\theta} = Pr, \quad (m/r)(d/dt)(r^2\dot{\theta}) = mg\cos\theta - P;$$

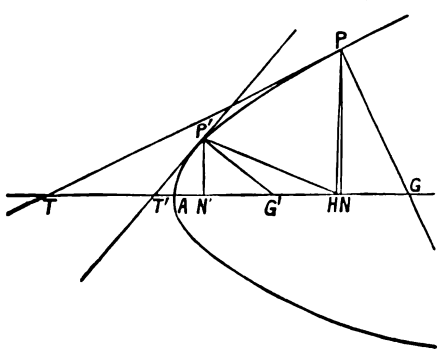
therefore initially $Pr^2 = k^2(mg - P)$; therefore $P = [k^2/(k^2 + r^2)]\,mg = \frac{1}{3}mg$, since $r^2 = k^2$.

15688. (A. M. Nesbitt, M.A.)—The normals to a parabola at P and P' meet the axis in G and G'. If H be the mid-point of GG', prove geometrically that HP = HP'.

Solutions (I.) *by* R. Tucker, M.A., C. Bickerdike, *and many others*; (II.) *by* Kela Deva Rau, B.A.

(I.) GG' = NN' and

$$HP^2 \sim HP'^2 = 4AS.AN + 4AS^2 - 4AS.HG + HG^2 \sim (4AS.AN' + 4AS^2 + 4AS.HG' + HG'^2) = 4AS.NN' - 4AS.GG' = 0, \ldots.$$

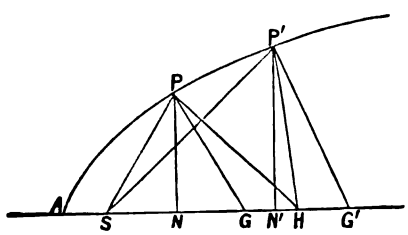


(II.) Join SP and SP'. From P and P' draw PN and P'N' perpendicular to the axis.

$$PH^2 = SP^2 + SH^2 - 2SH.SN = SG^2 + SH^2 - 2SH.SN.$$

Similarly,

$$P'H^2 = SG'^2 + SH^2 - 2SH.SN';$$



therefore

$$P'H^2 - PH^2 = SG'^2 - SG^2 - 2SH(SN' - SN) = (SG' + SG)(SG' - SG) - 2SH.NN' = 2SH.GG' - 2SH.NN' = 2SH(GG' - NN') = 0.$$

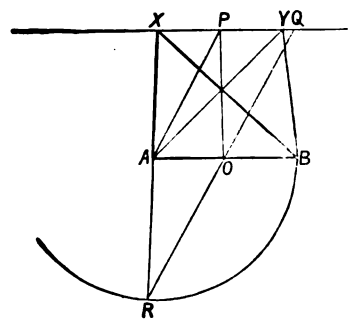
Since $GG' = NN' + N'G' - NG = NN'$; therefore P'H = PH.

15509. (C. M. Ross.)—Having given the base and the altitude of a triangle, and that one of the angles at the base is double the other, show how to construct the triangle.

Solutions (I.) *by* J. H. Carson; (II.) *by* C. Searle.

(I.) At O, the mid-point of the given base AB, erect OP perpendicular to AB and make OP equal to the given altitude. Through P draw XPY parallel to AB. Join AP. With A for centre and AB for radius describe an arc of a circle BR. Through O draw QOR parallel to AP. Join RA, and produce it to meet XPY in X. Cut off

$$PY = PX.$$

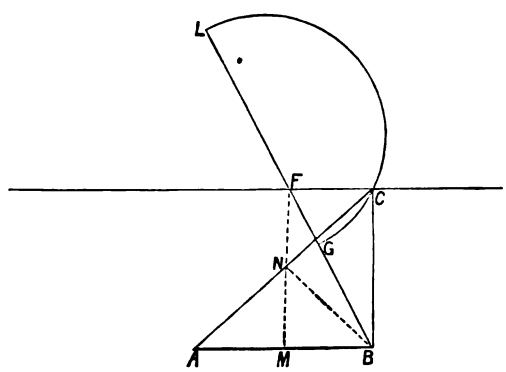


Then either ABX or ABY is the required triangle. For

$$XP : XA = PQ : AR = AO : AB = 1 : 2.$$

Thus AX = XY = YB, and the quadrilateral ABYX is clearly cyclic. Hence the angles XAY, YAB and ABX standing on equal arcs are equal; therefore $\angle XAB = 2\angle ABX$.

(II.) Let AB be the base, MF the altitude. Draw MF bisecting AB



at right angles. Divide FB at G and L, so that

$$FG : GB = FL : LB = 1 : 2.$$

On LG describe a semicircle cutting FC (parallel to AB) at C. Join CA, CB. Where CA cuts FM, viz. N, join BN. It can easily be shown that LCG is the locus of vertices of all triangles having the base FB and sides CF, CB, such that CF : CB = 1 : 2; therefore CF : CB = AM : AB, CF : AM = CB : AB. But CF : AM = CN : NA; therefore

$$CB : AB = CN : NA;$$

therefore BN bisects $\angle ABC$. But the triangles AMN, BMN are equal in all respects; therefore

$$\angle MAN = \angle MBN = \tfrac{1}{2}\angle MBC \quad \text{or} \quad \angle ABC = 2\angle BAC.$$

15628. (Robert W. D. Christie.)—If $x_1^2 + 1 = p_1 y^m$ for all integal values of m, then $x_n^2 + 1 = p_n y^m$ ad inf. Generalize.

E.g.: $239^2 + 1 = 2.13^4$; then $85922^2 + 1 = 5.17.3041.13^4$ ad inf.

Solution by Lt.-Col. Allan Cunningham, R.E.

The scope of this question is by no means clear; for, if $x_1^2 + 1 = p_1 y^m$ be true for one value of m, this involves

$$x_1^2 + 1 \equiv 0 \pmod{y, y^2, y^3, \ldots, y^{m-1}, y^m};$$

so that $x_1^2 + 1 = P_m y^m$ is true with the same x_1 (and different values of P_m) for all lesser positive integral values of m.

Further, the result $x_1^2 + 1 \equiv 0 \pmod{y}$ involves $x_m^2 + 1 \equiv 0 \pmod{y^m}$ for all positive integral values of m, the value of x_m being, however, usually different for each m. Along with each value of m there are always two (incongruous) values of x_m, each less than y^m.

The mode of obtaining these two (the least possible) values of x_m, *i.e.*, the roots of $x_m^2 + 1 \equiv 0 \pmod{y^m}$, from a given solution (x_1) of $x_1^2 + 1 \equiv 0 \pmod{y}$ is very fully explained and illustrated by examples in the present writer's paper on "Period Lengths of Circulates," in *Mess.*

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of Math., Vol. XXIX., 1900, pp. 145 *et seq.*; a table of x_m for all primes $y \not> 200$ is also there given (p. 166).

When the two roots x_m have been found of $x_m^2 + 1 \equiv 0 \pmod{y^m}$, all the other roots, say $x_{m,n}$, are included in the formula $x_{m,n} = M \cdot y^m \pm x_m$, and the value of p_n (in the original Question) is then given, simply as the quotient $p_n = (x_{m,n}^2 + 1)/y^m$.

This seems to be the generalization asked for.

Ex.—Given $239^2 + 1 \equiv 0 \pmod{13^4}$ [see p. 166, *op. cit.*]; therefore

$$(3 \cdot 13^4 + 239)^2 + 1 \equiv 0, \quad i.e., \quad 85922^2 + 1 \equiv 0 \pmod{13^4}.$$

The PROPOSER solves the problem as follows:—

Let $x^2 + 1 = py^m$. Then

$$(x + y^m)^2 + 1 = (p + 2x + y^m)\, y^m \quad \text{or} \quad \lambda^2 + 1 = Xy^m.$$

Similarly, if $x^2 + r = py^m$, where r = any root of p, then

$$(x + y^m)^2 + r = (p + 2x + y^m)\, y^m, \quad i.e., \quad \lambda^2 + r = Xy^m.$$

Ex.—Let $13^2 + 2 = 19 \cdot 3^2$; then

$$265^2 + 2 = 17^2 \cdot 3^5, \quad 2695^2 + 2 = 41 \cdot 3^{11}, \quad \ldots.$$

Similarly for any other prime.

15605. (JAMES BLAIKIE, M.A.)—A. and B. play at lawn-tennis, and A.'s chance of winning each point is to B.'s chance as m to n. Find A.'s chance of winning the game (1) when the score stands at "deuce," (2) when it stands at A.'s vantage, (3) at B.'s vantage.

Solution by the PROPOSER *and* A. M. NESBITT, M.A.

(1) If the score stand at deuce, the chance that A. will obtain vantage is $m/(m+n)$, that B. will obtain it $n/(m+n)$. In the next hand the chance that A. wins the game is clearly $m^2/(m+n)^2$, that B. wins it $n^2/(m+n)^2$; and thus the chance of deuce is $2mn/(m+n)^2$. Thus A.'s total chance of winning the game is

$$\frac{m^2}{(m+n)^2}\left[1 + \frac{2mn}{(m+n)^2} + \frac{4m^2n^2}{(m+n)^4} + \ldots\right] = \frac{m^2}{m^2+n^2}.$$

(2) If the score stand at A.'s vantage, his chance of winning in the next hand is $m/(m+n)$, while the chance of deuce is $n/(m+n)$; therefore A.'s chance of winning the game is

$$\frac{m}{m+n} + \frac{n}{m+n} \cdot \frac{m^2}{m^2+n^2} = \frac{m(m^2+mn+n^2)}{(m+n)(m^2+n^2)}.$$

(3) If the score stand at B.'s vantage, the chance of deuce in the next hand is $m/(m+n)$, and thus A.'s chance of winning the game is

$$\frac{m}{m+n} \cdot \frac{m^2}{m^2+n^2} = \frac{m^3}{(m+n)(m^2+n^2)}.$$

Example: When $m = n$, A.'s chance of winning is $\frac{1}{2}$ at deuce, $\frac{3}{4}$ at A.'s vantage, $\frac{1}{4}$ at B.'s vantage.

12865. (W. BOOTH.)—If a plane be drawn touching the sphere $x^2 + y^2 + z^2 = R^2$ along its intersection with $z^2 = a^2x^2 + b^2y^2$, prove that the equation of the developable so generated is obtained by equating to zero the discriminant of $x^2/(1-\lambda a^2) + y^2/(1-\lambda b^2) + z^2/(1+\lambda) - R^2 = 0$.

Solution by E. F. TIPPLE.

The surfaces $x^2(1-\lambda a^2) + y^2(1-\lambda b^2) + z^2(1+\lambda) = R^2$ intersect in the given curve. Reciprocating with respect to the sphere $x^2 + y^2 + z^2 = R^2$, we obtain that the surfaces $x^2/(1-\lambda a^2) + y^2/(1-\lambda b^2) + z^2/(1+\lambda) = R^2$ are enveloped by the developable into which the given curve reciprocates. But this developable is the envelope of the tangent planes to the sphere along the given curve. Hence developable is the envelope of the surfaces

$$x^2/(1-\lambda a^2) + y^2/(1-\lambda b^2) + z^2/(1+\lambda) - R^2 = 0.$$

QUESTIONS FOR SOLUTION

15677. (ROBT. W. D. CHRISTIE.)—Let p be any prime and the letters integral. Prove that

$$pqr = l^3 + l^2s + lt + n = (\mathrm{LMN})^{\frac{1}{3}}, \ \ldots;$$

e.g., $103 \cdot 18 \cdot 35 = 25^3 \cdot 25^2 \cdot 53 + 25 \cdot 635 + 265 = (630 \cdot 3605 \cdot 1854)^{\frac{1}{3}}$.

15678. (Lt.-Col. ALLAN CUNNINGHAM, R.E.)—Show that $F_m^4 + F_n^2$, where $F_x = 2^{2^x} + 1$ (a Fermat's number), can always be resolved into *two* factors when $n - m \not< 2$. Write down the co-factors when $n - m = 2$.

15679. (ALEXANDER HOLM, M.A.)—In Diophantus V. 19 it is required to find three numbers such that, if each is subtracted from the cube of their sum, the remainder may be a cube.

Diophantus' method leads to the numbers

$$\frac{68574961}{549353259}, \quad \frac{134953109}{549353259}, \quad \frac{162707336}{549353259}.$$

In the *Ladies' Diary* for 1716–17 (Leybourn's *Math. Questions*, Vol. I., pp. 52–62) it is stated that the lowest numbers hitherto found to satisfy the problem are $\frac{13851}{85184}, \frac{18954}{85184}, \frac{19467}{85184}$; required to find still lower numbers, for example, $\frac{351}{3136}, \frac{832}{3136}, \frac{833}{3136}$.

15680. (A. W. T.)—

$$[(b-d) - p(a-c)/3]^3 = (c-a)[(ad-bc) + 5p^3(a-c)/27 + p^2(b-d)/3];$$
$$d(a-c)^3 = \{c(a-c)^2 + p[(a-c) - (b-d)](b-d)\}(b-d).$$

If one of the above holds, show that the other holds also.

15681. (Professor SANJÁNA, M.A.)—Let the integer r be divided into two integers a_1, a_2; into three, b_1, b_2, b_3; into four, c_1, c_2, c_3, c_4; and so on. Let n be any other integer ($> r$); then show that

$${}^nC_1 + {}^nC_2 r!\left(\Sigma \frac{1}{a_1!\, a_2!}\right) + {}^nC_3 r!\left(\Sigma \frac{1}{b_1!\, b_2!\, b_3!}\right) + {}^nC_4 r!\left(\Sigma \frac{1}{c_1!\, c_2!\, c_3!\, c_4!}\right) + \ldots + {}^nC_r r! = n^r,$$

where the Σ's exhaust all possible arrangements of the letters in the denominators. When $n \not> r$ the last term is

$${}^nC_n r!\left(\Sigma \frac{1}{n_1!\, n_2! \ldots n_n!}\right).$$

15682. (J. J. BARNIVILLE, B.A.)—Having $u_n + 2u_{n+1} + u_{n+2} = u_{n+3}$, prove that

$$\frac{1.2.5}{1.2.3.4} + \frac{3.5.10}{1.4.6.9} + \frac{6.10.22}{3.9.13.19} + \frac{13.22.47}{6.19.28.41} + \ldots = \frac{3}{2};$$

$$\frac{2.3.7}{1.3.4.6} + \frac{4.7.15}{2.6.9.13} + \frac{9.15.32}{4.13.19.28} + \frac{19.32.69}{9.28.41.60} + \ldots = \frac{7}{6}.$$

15683. (Professor LANGHORNE ORCHARD, M.A., B.Sc.)—Find the product of n terms of the series $2 + 34 + 246 + 1028 + 3130 + \ldots$ by n terms of the series $0 + 30 + 240 + 1020 + 3120 + \ldots$.

15684. (A. M. NESBITT, M.A.)—(1) Over the whole of an infinite plane area are described a number of equal circles, each touching six others. A point is taken at random on the plane. Compare the chances of its falling within a circle with that of its falling in the space between three convex circumferences.

15685. (D. BIDDLE.)—Three rods of equal length, but of infinitesimal thickness, are thrown at random on a horizontal plane, so that each intersects the other two. Find the proportion of such throws that will result in every pair of intersections being within the middle thirds of the rods, and generalize by using $1/(2n+1)$ for "third."

15686. (G. H. HARDY, M.A.)—The area Δ and semi-perimeter s of a triangle are fixed. Show that the maximum and minimum values of one of the sides are roots of the equation $sx^2(x-s) + 4\Delta^2 = 0$. Discuss the existence of real maximum and minimum values.

15687 (R. CHARTRES.)—Three random points are taken in the sides of a triangle, one in each side, and joined. Find the mean value of the square of the area of the triangle thus formed. Elementary proof wanted.

15688. (Professor S. SIRCOM.)—If A, B, C, D, E, F be points on the edges YZ, ZX, XY, UX, UY, UZ respectively of the tetrahedron UXYZ, and if XYA denote the area of the triangle XYA, then the ratios

$$\frac{\mathrm{XYA} \cdot \mathrm{YZB} \cdot \mathrm{ZXC} \cdot \mathrm{UXE} \cdot \mathrm{UYF} \cdot \mathrm{UZD}}{\mathrm{ZXA} \cdot \mathrm{XYB} \cdot \mathrm{YZC} \cdot \mathrm{UXF} \cdot \mathrm{UYD} \cdot \mathrm{UZE}}$$

and

$$\frac{\mathrm{XYD} \cdot \mathrm{YZE} \cdot \mathrm{ZXF} \cdot \mathrm{UXC} \cdot \mathrm{UYA} \cdot \mathrm{UZB}}{\mathrm{XYE} \cdot \mathrm{YZF} \cdot \mathrm{ZXD} \cdot \mathrm{UXB} \cdot \mathrm{UYC} \cdot \mathrm{UZA}}$$

are unaltered by projection.

15689. (C. E. YOUNGMAN, M.A.)—Any four points A in a plane can generally be inverted from four different centres B into an orthocentric group of points; this relation between groups A and B is reciprocal, and the eight inverse figures are all of the same shape. The sixteen lines AB intersect in four fresh points C, centres of four circles for each of which the A's are inverse to the B's; these circles cut orthogonally at six (real) points D; and from any D the A's, B's, and C's invert into the corners of three parallelograms, and the other five D's into the corners and centre of a square. The first two parallelograms are duplicates, and all three are concentric with the square.

15690. (R. TUCKER, M.A.)—ABC is a triangle, K is the S. point, and $\omega_1, \omega_2, \omega_3$ are the B. angles of the triangles BKC, CKA, AKB. Prove that $\Sigma \cot \omega_r = 6 \cot \omega - \mathrm{cosec}^2 \omega - 2$.

15691. (JAMES BLAIKIE, M.A.)—BAC is an angle in a circle, and AB, AC meet a diameter in D and E; D and E' are the images in O of D and E. Prove that BE', CD' meet (in A') on the circumference.

15692. (Professor SANJÁNA, M.A.)—At every point P of a parabola the radius of curvature, PO, is taken, and from O the remaining normal, OP', is drawn to the curve. Prove that the envelope of the chord PP'

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is a parabola with the same vertex and with its concavity in the opposite direction.

15693. (Professor NANSON.)—If a fixed straight line cut one of a series of concentric similar and similarly situated conics at angles θ, ϕ, the length of the intercepted chord varies inversely as $\cot\theta + \cot\phi$.

15694. (Professor NEUBERG.)—Trouver l'enveloppe de la droite symétrique de l'axe d'une parabole par rapport à ses tangentes.

OLD QUESTIONS AS YET UNSOLVED (IN OUR COLUMNS).

4817. (Professor SYLVESTER, F.R.S.) [Re-proposed by special request for the sake of a more detailed solution (*cf. Reprint*, Vol. XXXIII., p. 53)].—In a school of 15 girls a rule has been laid down that they shall walk out every day in rows of three, but that the same two girls shall never come together twice in the same row. The rule is supposed to have been carried out correctly during the six working days of the week, but when the time comes for their going to church together on Sunday it is found to be absolutely impossible to continue it any further. Investigate whether the rule *can* have been correctly carried out during the six previous days, and, if so, show how.

9297. (J. O'BYRNE CROKE, M.A.)—Find, in quaternions, the equation of a surface of revolution such that the sum of the slant surfaces of pairs of cones having a circular section for a common base and two fixed points in the major axis as vertices shall be constant.

10754. (Professor DONALD MCALISTER.)—A convex inextensible pliable envelope in the form of a surface of revolution with its axis vertical is exposed to water pressure from within. Prove that at the widest part the tension along the meridians is a maximum or minimum according as it is less or greater than the tension across them.

10790. (H. W. SEGAR, B.A.)—Show that

$$\tfrac{1}{2}\pi\int_0^{\frac{1}{2}\pi} dx \log(1+\cos\theta\cos x)/\cos x = \cos\theta/1^3 - \cos^3\theta/3^3 + \cos^5\theta/5^3 - \dots .$$

10816. (G. S. CARR, M.A.)—If five equal spherical conductors be placed with their centres at the corners of a square pyramid, an edge of the base being a and the slant edge b, and if the sphere at the vertex be insulated and charged with electricity E, while the other spheres are connected to Earth, show that, if r, the radius of the spheres, be small compared to their mutual distances, the charge induced upon each of the uninsulated spheres will be $-ra\sqrt{2}\,E/\{b[a\sqrt{2}+(2\sqrt{2}+1)]\}$.

10848. (Professor B. O. PEIRCE.)—Let U be any function of the two polar co-ordinates r and θ which with its first space derivatives is finite, continuous, and single-valued throughout that part of the co-ordinate plane which is shut in by the closed curve T. Let δ be the angle between the radius vector drawn from the origin to any point P on T, and the normal to T at P drawn from within outwards. Then, if T does not include the origin, the line integrals of $U\cos\delta$ and $U\sin\delta$ taken around T are equal respectively to the surface integrals $D_r(rU)/r$, $D_\theta U/r$ taken over the area enclosed by T. [This theorem is a particular case of one to be proposed hereafter.]

NOTICES TO CORRESPONDENTS.

It is requested that all Mathematical communications should be sent to the Mathematical Editor,

Miss CONSTANCE I. MARKS, B.A., 10 Matheson Rd., West Kensington, W.

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THE LONDON MATHEMATICAL SOCIETY.

Thursday, November 10th, 1904 (Annual General Meeting).—Prof. H. Lamb, President, in the Chair.

Dr. G. H. Hallett was elected a member.

The President referred to the losses sustained by the Society by the deaths of Prof. Pirie and Mr. R. W. H. T. Hudson.

The Treasurer presented his report. The report was received and Dr. Leathem was appointed Auditor.

In connexion with the election of a Council and Officers for the ensuing Session, the President stated that Prof. Burnside was retiring from the office of Honorary Secretary. He expressed the appreciation of the Society of the services which Prof. Burnside had rendered during his tenure of the office, and referred to the advantage which had accrued to the Society through having had Prof. Burnside as a Secretary.

The Council and Officers for the ensuing Session were elected. The list is as follows:—President, Prof. A. R. Forsyth; Vice-Presidents, Prof. W. Burnside, Prof. E. B. Elliott, Prof. H. Lamb; Treasurer, Prof. J. Larmor; Secretaries, Prof. A. E. H. Love and Mr. J. H. Grace; other members of the Council, Mr. A. Berry, Mr. J. E. Campbell, Dr. J. W. L. Glaisher, Dr. E. W. Hobson, Major P. A. MacMahon, Mr. G. B. Mathews, Mr. A. E. Western, Mr. E. T. Whittaker, Mr. A. Young.

Prof. Forsyth having taken the Chair, the retiring President, Prof. Lamb, delivered an address on "Deep-water Waves." The address was ordered to be printed in the *Proceedings* of the Society.

The following papers were communicated:—

"Note on the Application of the Method of Images to Problems of Vibrations," by Prof. Volterra.

"On the Zeroes of certain Classes of Integral Taylor's Series (two papers)," by Mr. G. H. Hardy.

"The Linear Difference Equation of the First Order," by Rev. E. W. Barnes.

"Remarks on Alternants and Continuous Groups," by Dr. H. F. Baker.

"Expansions of the Elliptic and Zeta Functions of $\frac{1}{2}K$ in powers of q," by Dr. J. W. L. Glaisher.

"Examples of Perpetuants," by Mr. J. E. Wright.

"Two Simple Results in the Attraction of Uniform Wires obtained by Quaternions, with, for comparison, their Verification by the Geometry of the Complex," by Prof. R. W. Genese.

"On the Reducibility of Covariants of Binary Quantics of Infinite Order," by Mr. P. W. Wood.

"A Theorem relating to Quotient Groups," by Prof. G. A. Miller.

"On certain Classes of Syzygies," by Mr. A. Young.

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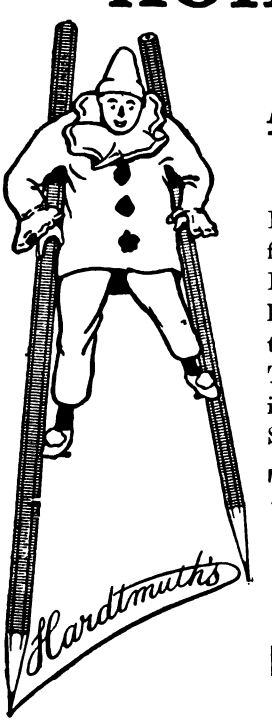

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